APPENDIX

Meetings

Summits

NIA Compliance

FHWA: Off-Model Air Quality Analysis – A Compendium of Practice – August 1999

Turbo Architecture Output

Triangle Region Sausage Diagram

Triangle Turbo Architecture Interconnect Diagram

Triangle Turbo Architecture Flow Diagram

Triangle Inventory to Market Package Comparison

Triangle Market Packages Report

Triangle Relevant Standards Activities

Triangle Stakeholders Report

Triangle Regional Architecture (Sample)

- Complete architecture is over 830 pages long and included in a separate appendix.

ITS Strategic Deployment Plan

Triangle Region
Consensus Building Meeting
July 23, 1999, 10:00 AM
MEETING SUMMARY

Attending:

Name	Agency	Phone	Fax	Email
Roberto Canales	NCDOT – Const. & Maint.	919-715-5662	919-715-2656	rcanales@dot.state.nc.us
Greg Fuller	NCDOT – TMS	919-733-8021	919-715-0955	gfuller@dot.state.nc.us
Terry Hopkins	NCDOT – Cong. Mgmt.	919-250-4151	919-250-4195	thopkins@dot.state.nc.us
Ann Lorscheider	NCDOT – Traffic Ops	919-250-4151	919-250-4195	alorscheider@dot.state.nc.us
Cheryl Evans	NCDOT – Traffic Ops.	919-250-4151	919-715-0955	cevans@dot.state.nc.us
Laura Slusher	NCDOT – Traffic Ops.	919-250-4151	919-715-0955	lslusher@dot.state.nc.us
Tom Parker	NCDOT – TMS	919-733-1506	919-715-0955	tparker@dot.state.nc.us
Joey Hopkins	NCDOT – Div. 5	919-560-6856	919-560-3371	jhopkins@dot.state.nc.us
Wally Bowman	NCDOT – Div. 5	919-560-6851		wbowman@dot.state.nc.us
Jamie Snow	NCDOT – Div. 5	919-560-3315		jsnow@dot.state.nc.us
Gail Grimes	NCDOT – PD & EA	919-733-7844		ggrimes@dot.state.nc.us
Mark Freeman	NCDOT/SWP	919-733-4705	919-733-2417	mafreeman@dot.state.nc.us
Rhett Fussell	NCDOT/SWP	919-733-4705	919-733-2417	rhett@dot.state.nc.us
Carl Pickney	NCDOT – IST	919-508-1809	919-508-1955	cpickney@dot.state.nc.us
Brad Hibbs	FHWA	919-856-4354	919-856-4353	bhibbs@fhwa.dot.state.nc.us
Max Tate	FHWA	919-856-4354	919-856-4353	jmtate@fhwa.dot.state.nc.us
Carl Dawson Jr.	City of Raleigh-DOT	919-890-3430	919-890-3451	
Ed Johnson	City of Raleigh-DOT	919-890-3430		edison_johnson@mindspring.com
Ed Sirgany	City of Durham	919-560-4366		esirgany@ci.durham.nc.us
Wesley Parham	City of Durham	919-560-4366		wparham@ci.durham.nc.us
Liz Rooks	Research Tri. Foundation	919-549-8181		rooks@rtp.org
Slade McCalip	Parsons Brinckerhoff	919-468-2137		mccalip@pbworld.com
Scott Lane	Capital Area MPO	919-831-6785		jslanempo@yahoo.com
Scott McClellam	Chapel Hill Transit	919-968-2755	919-968-2840	
Bob Godding	Chapel Hill Transit	919-968-2755	919-968-2840	
Pierre Osei-Owusa	DATA	919-688-2611(ext.19)		pkowusu@aol.com
Jeff Tsai	ITRE – NCSU	919-515-7931		tsai@unity.ncsu.edu
Fred Burchett	Kimley-Horn & Associates	919-677-2085	919-677-2050	fburchett@kimley-horn.com
Mark Dunzo	Kimley-Horn & Associates	919-677-2075	919-677-2050	mdunzo@kimley-horn.com
Kenn Fink	Kimley-Horn & Associates	919-677-2237	919-677-2050	kfink@kimley-horn.com

ITS Strategic Deployment Plan

Triangle Region
Consensus Building Meeting
July 23, 1999, 10:00 AM
MEETING SUMMARY

Distribution:

Name	Agency	Phone	Fax	Email
Mark Ahrendsen	Durham – Trans. Manager	919-560-4366		mahrendsen@ci.durham.ncus
George Alexiou	Parsons Brinckerhoff			alexiou@pbworld.com
David Bonk	Chapel Hill - Trans. Plng	919-968-2728	919-969-2014	dbonk@ci.durham.nc.us
John Brantley	RDU International Airport	919-840-2100	919-840-0175	
David Brown	Chapel Hill - Traffic Eng	919-968-2833		
Debbie Collina	ITRE/NCSU	919-515-8038		dcollins@interpath.com
Janet D'Ignazio	NCDOT	919-733-2520	919-715-4088	jdignazio@dot.state.nc.us
Mike Kozok	NCDOT	919-733-4713(x229)		mkozak@doh.state.nc.us
Kim Fisher	Cary - Public Works	919-469-4092		
Calvin Genereaux	Johnston County	919-989-5150		
Mike Hailperin	Raleigh - Transit .	919-831-6785	919-831-6821	
Steve Mancuso	Durham - Transit.	919-688-2611		smancuso@ci.durham.nc.us
Jon Nance	NCDOT - Div. 5r	919-560-6851	919-560-3371	jnance@doh.dot.state.nc.us
Blake Norwood	NCDOT – SWP	919-733-4705		norwood@swp.dot.state.nc.us
Jim Ritchey	TTA	919-485-7424		jritchey@ridetta.org
Jamie Snow	NCDOT - Incident Mgmt.	919-560-3315		jsnow@mail.dot.state.nc.us
Gordon Ziegler	DMV	919-733-2426		gzeigler@mail.dot.state.nc.us

The ITS Strategic Deployment Plan consensus building meeting for the Triangle Region was commenced at approximately 10:00 AM at the NCDOT Transportation Building in Raleigh, North Carolina. Following is a summary of the proceedings of this meeting.

Wally Bowman welcomed the participants and gave a brief statement on the importance of ITS.

Fred Burchett, Ann Lorscheider, Mark Dunzo, Kenn Fink, and Roberto Canales gave a fifteen-minute presentation covering the following topics:

Purpose of the Meeting
ITS in the Triangle and Statewide
Overview of ITS from a National Perspective
Description of Strategic Plan Development and Deployment Process
Purpose and Use of the Strategic Plan
Proposed Deployment Plan Schedule

Triangle Region
Consensus Building Meeting
July 23, 1999, 10:00 AM
MEETING SUMMARY

Following the presentation, a package was handed out to participants which included reproductions of the slides used in the presentation, a list of potential transportation stakeholders compiled from databases created during other public input activities, a paper written by Dr. Christina Johnson and Shelley Rowe of the FHWA discussing ITS titled "Intelligent Transportation Systems: The Role of Architecture, " and a brochure distributed by the United States Department of Transportation entitled "Intelligent Transportation Systems – The Future of Transportation Starts Here".

At this point, Fred Burchett repeated to the participants that the main purpose of the consensus building meeting was to help identify transportation stakeholders and ITS champions in the region, and to gather input from the attendees on the proposed process, and to solicit recommendations for making the process more effective.

Fred Burchett then began a directed discussion of specific issues, some of which were contained in the meeting invitation sent to participants prior to the meeting. The issues discussed were:

- Key ITS issues in the Region
- Comments on proposed process
- Identification of stakeholders

Below is a summary of the key points raised during this discussion

- Key ITS issues
  - Staffing – Staffing of ITS was seen by many as a major concern. The plan should include recommendations for staffing to ensure that the ITS projects deliver promised benefits.
  - The benefits of ITS should be tied to the needs.
  - The ITS America video should be distributed to help build support, the air quality video is a good template.
  - Specific examples of ITS applications should be provided to stakeholders to assist in the decision making process.
  - Benefits to air quality should be included in the analysis.
  - Benefit to cost analysis on several example projects should be done early to provide a basis for the impact of certain ITS technologies.
  - Maintenance of the systems should be considered.

- Comments on proposed process
  - Stakeholder meeting should happen on a regional basis.
  - Provide "targeted" workshops with stakeholders.

- Potential Stakeholders

- Hospitals
- School buses
- Transit
- Fire/Police/Emergency Services

Following, Mr. Burchett asked the participants to review the stakeholder lists distributed to them and identify key people (or add key people if not on the list) that should be included in the process.

Please return your input to this list to Fred Burchett by August 20th. At this point Fred Burchett thanked the participants for coming and adjourned the meeting at approximately 11:30 AM.

ACTION ITEM(S):

- Provide Stakeholder Names to Fred Burchett no later than 8/20/99.

ITS Strategic Deployment Plan

Triangle Region
Durham Planning Meeting
August 17, 1999, 9:00 AM
MEETING SUMMARY

Attending:

Name	Agency	Phone	Fax	Email
Wesley Parham	City of Durham - DOT	919-560-4366	919-560-4561	wparham@ci.durham.nc.us
Tim Saunders	City of Durham - PCHC MPO	919-560-4366	919-560-4561	wparham@ci.durham.nc.us
Kim McCarter	City of Durham -DOT	919-560-4366	919-560-4561	kmccarter@ci.durham.nc.us
Ann Lorscheider	NCDOT – Traffic Ops	919-250-4151	919-250-4195	alorscheider@dot.state.nc.us
Cheryl Evans	NCDOT – Traffic Ops.	919-250-4151	919-715-0955	cevans@dot.state.nc.us
Laura Slusher	NCDOT – Traffic Ops.	919-250-4151	919-715-0955	lslusher@dot.state.nc.us
Mark Dunzo	Kimley-Horn & Associates	919-677-2075	919-677-2050	mdunzo@kimley-horn.com
Kenn Fink	Kimley-Horn & Associates	919-677-2237	919-677-2050	kfink@kimley-horn.com

The ITS Strategic Deployment Plan Durham planning building meeting for the Triangle Region was commenced at approximately 9:00 AM at the City of Durham Planning Department offices at City Hall in Durham, North Carolina. Following is a summary of the proceedings of this meeting.

Mark Dunzo began the presentation by discussing the purpose of the meeting. Mr. Dunzo discussed the purpose of the plan and the need for a Strategic Deployment Plan for the Region and the State. Mr. Fink gave a brief overview of the process.

Mr. Dunzo then led a roundtable discussion of problems that the Durham area was facing, and potential ITS projects which may be able applicable in Durham and the Triangle Region.

The following is a summary of the roundtable discussion.

PROBLEM AREAS

- 15/501 to Durham Freeway South Square Mall to I-40
- Duke Street
- NC 98
- 15/501 bypass in Chapel Hill
- NC 54
- US 15 South in Chapel Hill
- I-85 through Durham

Triangle Region
Durham Planning Meeting
August 17, 1999, 9:00 AM
MEETING SUMMARY

POTENTIAL PROJECTS

- Freeway management on I-40 and I-85
- Traffic Demand Management study for NC 54 and I-40
- Looking at HOV and HOT Lanes
- Transit preemption/priority
- Transit information system
- Express bus lanes
- Orange County transit is expanding and plans to add fixed route, ITS may provide coordination between transit agencies
- ITS applications for Chatham County transit
- Traveler information at Park n ride locations
  -15/501 @ I-40
- Ramp metering (west of Durham)
- Smart-cards for transit fares
- Traveler information
  - Radio – HAR
  - D.M.S. – better use
  - Cell phone

Following the discussion, Mr. Dunzo indicated that Kimley-Horn would evaluate the problems and projects, and provide example for the upcoming TCC meeting. The meeting was adjourned at approximately 10:30.

ITS Strategic Deployment Plan

Triangle Regional Summit
November 30, 1999, 12:30 PM
MEETING SUMMARY

Attending:

Name	Agency	Phone
Mark Ahrendsen	City of Durham – Transportation Manager	919-560-4366
George Alexiou	Parson Brinckerhoff, Quade & Douglas, Inc.	919-467-7272
Frederick Allen	North Carolina Aggregates Association	919-782-7055
Amanda Arnold	Triangle Transit Authority	919-549-9999
Ken Atkins	Wake County Economic Development	919-664-7047
Jeff Bandini	Parker, Poe, Adams & Bernstein, LLP	
Christie Barbee	Carolina Asphalt Pavement Assoc.	919-838-8004
Jimmy Beckom	City of Raleigh – Transportation Manager	
Dempsey Benton	City of Raleigh – City Manager	919-890-3000
Betty Blades	Dept. of Commerce – Div of Travel & Tourism	919-733-4171
David Bonk	Town of Chapel Hill – Trans. Planning	919-968-2728
Wally Bowman	NCDOT Division 5	919-560-6851
Mike Braswell	NCDOT	919-733-8016
Todd Brewer	Princeton High School	
Skip Browder	Johnston Co. Trans. Committee	
Jennifer Bryan	Knightdale Chamber of Commerce	919-266-4603
Fred Burchett	Kimley-Horn & Associates, Inc.	919-677-2000
Patrick Byker	Durham Chamber of Commerce	919-682-2133
Phil Calabrese	IBM	
Roberto Canales	NCDOT – Construction & Materials	919-715-5662
Charlie Carden	Division of Motor Vehicles	919-733-7872
Gene Cella	Division of Motor Vehicles	
Debbie Collins	ITRE – Transit Operations Group	704-639-7653
Cam Cover	NC Cable Telecommunications Assoc.	919-834-7113
Jeff Dale	NCDOT	919-250-4151
Robert Davis	Princeton High School	
Carl Dawson	City of Raleigh – Traffic Engineer	919-890-3430
Charles Diehl	North Carolina Trucking Assoc. – President	919-834-0387
Janet D'Ignazio	NCDOT	919-733-2520
James Dunlop	NCDOT – Congestion Mgmt. Engineer	919-250-4151
Mark Dunzo	Kimley-Horn & Associates, Inc	919-677-2000
Patty Eason	NCDOT – Division 7	336-334-3192
Bob Etheridge	NC Congressman	919-829-9122
Cheryl Evans	NDOT	919-250-4151
Beth Evans	Office of Motor Carrier Safety	919-856-4378
Ann Faison-Keith	NCDOT	919-733-4740
Janice Faulkner	Division of Motor Vehicles	919-733-2403-
Mike Fendrick	Parson Brinckerhoff, Quade & Douglas	919-467-7272
Kenn Fink	Kimley-Horn & Associates, Inc	919-677-2000

Triangle Regional Summit
November 30, 1999, 12:30 PM
MEETING SUMMARY

Stan Foushee	Town of Carrboro	
Greg Fuller	NCDOT	919-733-8021
Scott Gardner	Duke Power Co.	919-968-2316
Bob Geolas	NCSU Centennial Campus	919-515-7036
Karen Gilmore	Chapel Hill – Carrboro Chamber of Comm.	919-967-7075
Anson Gock	NCSU	919-515-1605
Bob Godding	Town of Chapel Hill	
Kelly Goforth	Triangle Transit Authority	919-485-7462
Don Goins	NCDOT	919-715-5662
Mark Gorman	NORTEL	919-992-5536
Tom Gould	NCDOT Division 5	919-560-6851
Derek Graham	NCDPI Transportation Services	919-715-1948
Gail Grimes	NCDOT	(919)733-7844
James Hambright	NCDOT	919-250-4151
Stephanie Harris	Kimley-Horn & Associates, Inc	919-677-2000
Ed Harrison	Sierra Club – Durham	919-490-1566
Roger Henderson	Wilbur Smith & Associates	919-755-0583
Marshall Henry	NCDOT	
Elizabeth Honeycutt	NCDOT	919-250-4151
Terry Hopkins	NCDOT- Traffic Engineering	919-250-4151
Joey Hopkins	NCDOT Division 5	919-560-6851
Ron Hughes	UNC Highway Safety Research Center	919-962-7411
Kelly Hutchinson	NCDOT	919-733-2210
Vicki Hyman	News & Observer	
Pat Ivey	NCDOT Division 7	336-334-3192
Thomas Janssen	Triangle Transit Authority	
Barry Jenkins	Carolinas AGC	
Bill Jennings	Traffic Patrol Broadcasting	919-832-8200
Horace Johnson	Town of Hillsborough – Mayor	
Michael Jones	Dept. of Admin. – Board of Science & Tech.	919-715-0960
David King	NCDOT – Deputy Secretary	919-733-2520
Mike Kozak	NCDOT – Public Transportation	
Charles Krautler	Triangle Council of Governments	
Scott Lane	CAMPO	919-831-6785
Glen Lang	Town of Cary – Mayor	
Erick Larson	City of Durham – MPO TAC	919-660-5865
John Long	Martin Marietta	919-783-4577
Ann Lorscheider	NCDOT- Traffic Engineering	919-250-4151
Michael Loyselle	FHWA – NC Division Office	919-856-4346
John Mallard	Central Carolina Bank	919-683-7694
Chris McAdams	DMV Enforcement	919-818-0320
David McCoy	NCDOT – Secretary	919-733-2520

Ashley Memory	NCDOT – Public Info. Office	919-715-2395
Jeff Merritt	Raleigh Chamber of Commerce	
Eric Michaux	NC Board of Transportation	919-596-8181
Joe Milazzo	ITRE	919-878-8080
Mary Moser	Cisco Systems	
Rick Murraa	CAT	
Jon Nance	NCDOT Division 5	
Sandy Ogburn	Triangle Transit Authority	919-406-1710
Pierre Owusa	Durham Area Transit Authority	919-688-2611
Jim Parajon	Town of Cary – Principal Planner	
John Pearce	Duke University – Architect	
Tim Philips	Office of Motor Carriers	
Carl Pickney	NCDOT	(919)508-1809
David Price	NC Congressman	919-789-8771
Ralph Price	NC State Highway Patrol	919-733-3861
Dale Privette	Town of Cary – Traffic Engineer	919-462-3833
Chip Radford	Industrial Properties	919-840-8000
Wil Ravenhorst	Kimley-Horn & Associates, Inc	919-677-2000
Ellen Reckhow	Durham County	919-383-3883
James Ritchey, Jr.	Triangle Transit Authority	919-558-9320
John Roberson	Triangle Transit Authority	919-485-7464
Paul Roberts	NCDOT – Info. Systems Technologies	(919)508-1751
Doug Robertson	Highway Safety Research Center	919-962-7411
Don Rohrbaugh	Town of Garner – Mayor	919-772-4688
Tammy Royster	Wilbur Smith & Associates	
Len Sanderson	NCDOT – State Highway Administrator	919-733-7384
Ruth Sappie	NCDOT- Human Resources and Intergovernmental Affairs	919-733-2520
Juanita Shearer-Swink	Triangle Transit Authority	919-549-9999
Michael Shiflett	InterNeighborhood Council (Durham)	
Hope Simms	Bob Etheridge's staff	
Jamie Snow	NCDOT Division 5	919-560-6851
John Tallmadge	Triangle Transit Authority	919-485-7421
Helen Tart	Transportation Reform Is Possible (TRIP)	919-833-0586
Max Tate	FHWA	919-856-4354
Allen Taylor	Wake Co. Public School System	919-850-1900
Nick Tennyson	City of Durham – Mayor	919-560-4333
Dan Thomas	NCDOT – Statewide Planning	919-733-4705
Jeff Tsai	ITRE	
Brian Van Horn	Bobbitt & Associates	919-851-1980
E. D. Walker	NCDOT – Engineering Technology Systems	919-4177
Louie Walters	Gorman Bros.	919-549-0787

Teresa Watts	Dept of Comm. – Div. of Travel & Tourism	919-733-4171
Rachel Willis	Triangle Transit Authority	
Teresa Wyatt	NCDOT – Chief's Office	919-715-5662
Brian Yamamoto	NCDOT – Project Development and Envr. Analysis	919-733-7844
Smedes York	York Properties, Inc.	919-821-1350

The ITS Strategic Deployment Plan - Triangle Regional Summit commenced at approximately 12:30 PM at the Raleigh Convention Center in Raleigh, North Carolina. Following is a summary of the proceedings of this meeting.

12:30-1:30 PM Guests were registered and given the opportunity to explore demonstrations that were given on ITS technologies. Included was a slide presentation of web pages showing real-time traffic information, a video demonstrating ITS applications, and a demonstration of the CVISN (software for Commercial Vehicle Operations) software.

1:30-2:15 Mr. David King, Deputy Secretary of the North Carolina Department of Transportation, provided a brief overview of project and anticipated outcomes as well as a vision for ITS deployment in NC. He then introduced Mr. David McCoy, Secretary of the North Carolina Department of Transportation. Secretary McCoy began by welcoming everyone to the Triangle Regional Summit and gave special recognition to Congressman Bob Etheridge who was also in attendance. Secretary McCoy emphasized the importance of ITS to the department both now and in the future. Secretary McCoy then introduced the honorable David Price, Congressman to the US House of Representatives. Congressman Price presented an overview of ITS from a national perspective and related some of his experiences with ITS.

2:15-2:25 Mr. Eric C. Michaux, Member of the North Carolina Board of Transportation, provided an introduction and background information on the project and the Triangle Region.

2:25-3:10 Fred Burchett, Mark Dunzo and Kenn Fink presented an overview of ITS that included specific technologies as well as their benefits.

3:10-3:40 Mr. Joey Hopkins, the Division Operations Engineer of the North Carolina Department of Transportation, and Mr. James Ritchey, general manager of the Triangle Transit Authority, presented examples of ITS in the Triangle.

4:00-5:00 Breakout sessions were conducted with four groups, each one focusing on a specific topic. Groups were asked to answer/discuss a series of questions on the topics of Traffic/Incident Management, ITS for Transit, Traveler Information Systems, and Commercial Vehicle Operations. Summaries from the breakout groups are shown below.

BREAK-OUT GROUP FINDINGS

TRAFFIC MANAGEMENT and INCIDENT MANAGEMENT

If you could design the perfect way to get to work, what would it look like?

- Telecommuting – not sitting in traffic
- 1 signal at the entrance to my sub-division; no more signals until the parking lot at work
- One vehicle from origin to destination; no change in mode
- Bus has limited destinations vs. personal car goes anywhere

As a motorist, what are the biggest problems?

- Congestion
- Dangerous/aggressive drivers
- Impatience
- Uninformed/lost drivers
- Lack of information about what a driver should do when unexpected event occurs; drivers would be more patient if they had more information about an incident
- Information is not timely – find out too late about incident

What Conditions/Where Locations?

- Ramp merging
- Issues associated with the use of Ramp metering
  - Where to store cars to prevent queuing on to streets accessing freeway
  - How much of I-40 should be metered
  - Works best with parallel frontage roads
  - Issues associated with work zones
  - Provide notification further in advance
  - Could red/yellow/green status be provided in advance of work zones?

Who would champion ITS?

- Coordinate at the state level with buy-in of local MPO's
- Without true cost/benefit analysis, MPO's may not be ready – comparing to existing infrastructure improvements
- ITS is higher priority in urban regions
- Show cases where ITS has been added to projects and gained improvements and capacity

How would Emergency Management benefit from ITS?

- Having information to handle unexpected increases in traffic
- Congestion slows down response times
- Controlling signals along route
- Evacuation Procedures
  - Making I-40 all lanes westbound
  - Where do you put traffic on other end?

How should ITS be funded?

- Rural areas may not want to support separate pot of money for ITS
- Possible cost/benefit analysis of Triangle operations center and federal funds and test area
- CMAQ funds – but still impact equity formula
- Is existing equity fair and correct?
- Sell naming right to management center to fund

Based on what you've heard today, what areas of ITS should be given a high priority to implement in the Triangle?

- Move beyond incident detection systems – increase IMAP vs. TMC
- Actively manage traffic, ramps, speeds, gaps and photo enforcement
- Corridors or area-wide
- Real-time information about alternate routes to give motorists choices (Day-to-day)
- Based on lack of funding, concentrate on corridors
- Continue to investigate benefits
- Impacts on alternate routes that are not monitored
- Alternate routes are included in overall incident management program
- Clearing incidents quicker
- Providing information to different types of travelers – commuting vs. through traffic
- Before deploying system, make sure adequate funds are available for operations and maintenance

Summary

- Fresh, accurate information – Do whatever it takes
- Deploying ITS will help with traffic erosion
- Implement in select corridors for highest impact
- Implement with combination of other projects - several solutions to problems
- Implement technology that can be integrated and expandable

ITS FOR TRANSIT

Needs of Users?

- More efficient
- Van pool
- Access to transit system for pedestrians
- Tying two systems together (school & working parent)
- Park and Ride
- HOV lanes
- Pick-up stations
- More choices and options along with cost/benefit
- Schedules
- Safety
- Service that intices riders
- More frequency
- Better level-of-service (attitude)
- Better information systems by multiple providers

Responsibilities of Providers

- Point to point information for the rider
- Implement an ITS system based on real time
- Planning – size, economical, quality of service
- Coordinating with signals
- Cross-jurisdiction lines –user friendly

Responsibilities of Policy Makers

- Jurisdiction lines – 4 systems
- Compromise politics
- Lack of resources – funds and commitment

- Land use/urban design
- Signal preemption for buses

Summary
- Point to point
- Preemption for buses
- HOV/bypass lanes
- Single image for transit – teach the markets (media, advertisements, etc.)
- Web page links – from NCSmartlink to transit
- Touch screens – user friendly and low level technology
- Maintenance of resources
- Transit needs – communicate with employers about needs of employees; maintain working relationships

TRAVELER INFORMATION SYSTEMS
Where do you get Traffic Information?
- Commercial Radio –
- Changeable message signs
- DOT website – welcome centers used website for Floyd closing
- Roadmaps
- Word of mouth
- Camera shots on web
- *40 (live, personal information) sponsored by Traffic Patrol Broadcasting
- Highway Advisory Radios (AM 680)

What traffic information do we want?
- GPS
- In-vehicle information
- Kiosks
- TIMS by NCDOT – current road status website
- Alternate route information
- More highway advisory radios
- Continuous loop traffic data radio broadcasts
- Current, correct data
- Good estimate of travel time
- Time not distance
- Traffic information clearinghouse - *N11

- Kiosks/signs inside major employers
- Fog alert systems
- Parking availability information
- Cameras on emergency vehicle/police
- Stranded motorists – mayday systems
- Truck restrictions – times and lanes

COMMERCIAL VEHICLE OPERATIONS (CVO)

Regional Problems

- Uneducated motorists
  - Turning radii issues (as relates to car operators)
  - Permits and oversize vehicles
- Perception of heavy vehicle drivers (That they are unsafe) – drivers are commonly at fault
- NC is a trucking state and NCDOT's a large customer
- Need education (on both sides of issues)
- Small percentage of bad truck drivers contribute to the negative perception of all truck drivers
- Acceleration rates of cars vs. trucks
- Lane widths sometimes too small for trucks and cars together
- New technology in vehicles

Operational Concerns

- Crash numbers and severity
  - 22,000 crashes involving trucks in 1998 (70 per day)
  - 9 million trucks go through weigh stations each year
- DMV focuses on trucker behavior , which most often leads to accidents
- Over 10,000 teen drivers have been trained about "no zone" since 1990
- Driver training (especially SUV's) – basic handling of vehicle
- Truck lane restrictions
  - HOV lanes
  - Fuel tax issues
  - Aggressive driving

What is the trucking industry's focus on technology?

- Mom & Pop shops – will they be left out?
- Data sharing
- Communication between the industry and enforcement

- In the future, information and data via internet and computer system

Application of technology (dump truck industry)
- Voluntary truck weight (no overweight trucks)
- Safe operations - tarping trucks (avoid spillage)
- Education of motoring public as to the operation of heavy vehicles
- Acceleration lanes on roadways help minimize conflicts between motorists and truckers
- Enforcement and industry as partners

Technology
- Enforcement officers with laptops and 800MHz
  - Get instant background information, etc.
  - Need to know information on load (ex. Hazardous waste)
  - Information sharing on our of service vehicles
- Weigh-in motion
- Collision avoidance systems
- Per-clearance systems
- GPS for industry and customer information
- Truck status information
- Qualcomm technology
- Electronic log books
- Perishable loads and relationship with traffic information to avoid congestion

Summary
- Information to DMV on trucks
- Information to truckers about traffic conditions
- Pre-clearance technology
- Safety issues and work zones
- Truck lane restrictions, etc.

5:00-5:30 A summary of each of the breakout group's findings was presented to the entire group. Ms. Juanita D. Shearer-Swink, a Member of the North Carolina Board of Transportation, provided the concluding remarks to the day's events.

5:30-6:30 A reception and additional one-on-one conversations followed the summit.

Triangle Regional Summit
November 30, 1999, 12:30 PM
MEETING SUMMARY

ACTION ITEM(S):
The first Regional Team Meetings for the Triangle Region will be held on Thursday, January 27, 2000 at the Triangle J Council of Governments office in Durham from 9:00 to 12:00. The purpose of this meeting will be to discuss and refine potential projects that have been developed as a result of your input. Your participation is warmly welcomed and essential in order for this to be a true regional plan for integrated system deployment. A mailing providing more information on the meeting will be coming soon.

In the interim, we would like your input on these minutes, as well as your input on the Summit in general. We will be holding several more summits across the state and would like to know your opinions of what was good, and what could be improved. To that end, we have enclosed a small survey sheet, along with a postage paid return envelope. This form also asks for your input about potential projects that should be included in the plan. Please take the time to fill out this form and send it back, as it will help to guide both the project and the deployment plan in the Triangle Region.

Please direct any further comments or suggestions you have for these minutes or Summit to Kenn Fink via email at ITS-TRIANGLE@KIMLEY-HORN.COM or by phone at (919) 677-2237.

National ITS Architecture Compliance

The Statewide ITS Architecture and Strategic ITS Deployment Plan development process are both intended to be planning tools. The Strategic ITS Deployment Plan is a planning document which draws inputs from potential ITS customers throughout the State and Region. These inputs are logged and documented, then ranked to provide a snapshot of the perceived ITS needs for the next 20 years. Based on this documentation, the benefits of each project or improvement can be identified and, in turn, added to regional Transportation Improvement Plans (TIP) and the North Carolina Statewide Transportation Improvement Plan (STIP).

The development of the Statewide ITS Architecture is intended to guide the implementation process by providing a structure around which to design. ITS elements and concepts are generically named to permit a wide variety of design options, changes in technology, or institutional changes that occur over time. The intent is to provide freedom to designers and implementers by providing a stable structure for interconnection while providing flexibility to meet the unique needs of specific users.

The National ITS Architecture is divided into three levels: logical, physical and technical. The logical architecture provides a functional view of a system that assists in organizing complex entities and relationships by identifying system functions and information flows. The logical architecture guides development and deployment through functional requirements that are independent of institutions and technology. The logical architecture does not identify how each ITS function is to be implemented.

The physical architecture is the physical representation of how a system should provide the desired functionality. The physical architecture defines the information and data flows between elements and the communication requirements needed to make the system function. The data flow definitions within the physical architecture require standards to provide functionality between systems, which is the basis of the ITS standards development process.

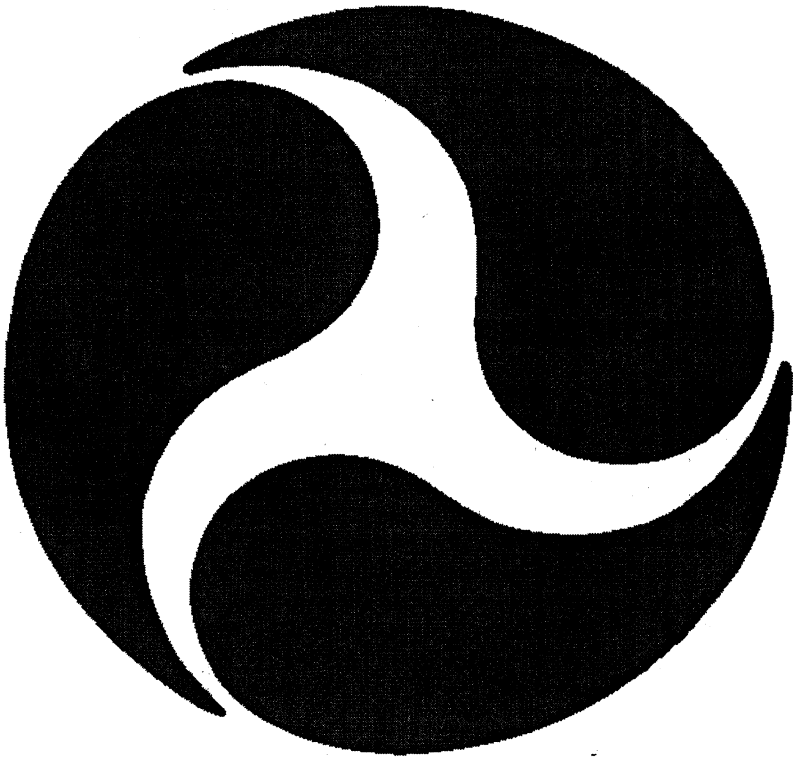
The technical architecture is the formal design and implementation process. The technical architecture defines the implementation of the physical architecture. The technical architecture is the formal design and implementation that defines system hardware and software functionality, their interaction, and the deployment of a system that processes and distributes the gathered data.

The three levels of the National ITS Architecture work together to refine the ITS needs from the planning stage down to a specific hardware deployment. For example, the logical and physical architecture may identify the need for shared traffic information. The physical architecture would define traffic information as traffic data from detectors and video from CCTV cameras.

The purpose of this document is to develop a logical architecture for ITS deployments in the State of North Carolina. The physical architecture is part of this document, but only in describing the interaction between elements, centers, etc. The appendices document the physical architecture through the data flow diagrams and other visual methods.

This document provides the logical and physical architectures as required by FHWA and used in the long-term ITS deployment throughout the state. The details in the development of the technical architecture are left up to each entity and their designers and implementers. The logical and physical architecture layers are a tool that is to be used by the designers and implementers to ensure that data and information is shared between systems. By approaching the ITS Architecture deployment from the logical and physical levels, this document will serve as a roadmap for ITS deployments throughout the State of North Carolina for years to come without locking the State into specific technologies that may change over time.

Off-Model Air Quality Analysis: A Compendium of Practice



Federal Highway Administration
Southern Resource Center
August 1999

Introduction

Air Quality analysis methodologies have become more refined over the years to fill the need in the transportation community to satisfy various requirements including Transportation Conformity and Congestion Mitigation and Air Quality Program project justification. Off-Model methods continue to be developed and refined to allow for analysis of innovative, as well as some common, projects to account for reductions in vehicular emissions. The most typical analysis is associated with Vehicle Miles of Travel (VMT) reductions, but reductions in emissions can also occur due to decreases in vehicular delay.

This is an observation in techniques which have been used in the South to provide for the evaluation of possible emission reductions. For the purpose of this compendium, Off-Model methodologies are analyses performed without the specific use of a Travel Demand Model. As previously stated, these analyses can be used for either of two primary purposes. These two purposes are Transportation Conformity Analyses and Congestion Mitigation and Air Quality (CMAQ) Improvement Program project justifications. The later of these two is probably the most crucial given the need for project justification as a funding mechanism; however, with the increasing difficulties in showing an offset of VMT growth in most areas, any reduction will only provide a benefit to the Conformity Process.

This compendium offers a look into several methodologies utilized in Federal Highway Administration's Southern Resource Center geographic area and may be duplicated and disseminated at will. These methodologies are not all encompassing but should offer valuable insight into Off-Model practice. Updates of this compendium will occur and include any needed changes in the reference section.

If you have any questions or comments please address them to:

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Intersection Improvements

1. General Analysis

This analysis incorporates a conservative approach to intersection improvements. It can be used for grade separation and signal timing. The conservative approach is only analyzing Volatile Organic Compound (VOC) reductions; however, NO_x may be analyzed in a similar fashion.

The analysis is as follows:

a) Calculate the existing VOC emissions.
$VOC_B = EF_B * VOL_{APP} * DIST_{APP}$

where,
VOC_B = Emissions before improvement, grams
EF_B = Emission factor (grams per mile) based on assumed speed before improvement
VOL_{APP} = Peak period approach volume
$DIST_{APP}$ = Approach distance in miles

b) Determine the average speed after the improvement.

c) Calculate the VOC emissions after the improvement.
$VOC_A = EF_A * VOL_{APP} * DIST_{APP}$

where,
VOC_A = Emissions after improvement, grams
EF_A = Emission factor (grams per mile) based on average speed after improvement

d) Calculate daily VOC emission reductions.
$VOC_R = (VOC_B - VOC_A)$

where,
VOC_R = VOC emission reductions, grams/day

2. Traffic Signal Computer Upgrade[2]

The analysis of this project was for the upgrade of computer equipment and software, cabinets and controllers, and replacement of the Communications Plant. The justification was based on an increase in the reliability of the traffic control device synchronization in the metropolitan area. This would decrease delays and reduce vehicle idle emissions. The analysis for this project was performed as follows:

a) 3-4 minutes per vehicle per direction on a major arterial with an average vehicle rate of 38,000 vehicles or 2533 hours per day was assumed to be the savings by having the more reliable system. These are the savings for a single computer section.

b) There were 60 computer sections amounting to a savings in idle time of 152,000 hours of vehicle delay per day.

c) Emission rates were established by Hillsborough County using Mobile 5a. The rates were as follows:
CO = 0.32018 kg/vehicle hour
VOC = 0.0227 kg/vehicle hour
NO_x = 0.00988 kg/vehicle hour

d) To be conservative, especially with the negative benefits which would occur for NOx with an increase in speed, emission benefits were assumed to occur only during the AM and PM peak periods (4 hours total).

e) The benefits were then calculated.
CO = (0.32018 kg/vehicle hour)(152,000 veh hrs/day)(4 pk hrs/24 hrs) = 8,111 kg/day (8.922 tons/day)

VOC = (0.0227 kg/vehicle hour)(152,000 veh hrs/day)(4 pk hrs/24 hrs) = 575 kg/day (0.632 tons/day)

NO_x = (0.00988 kg/vehicle hour)(152,000 veh hrs/day)(4 pk hrs/24 hrs) = 250 kg/day (0.275 tons/day)

Note: Delay reductions can be obtained through most intersection analysis software.

High Occupancy Vehicle (HOV) Lanes

1. General Analysis

Similar to the general intersection analysis, the HOV lane analysis is again conservative with only VOC reductions accounted; however, NO_x may be analyzed in a similar fashion. This analysis also assumes that emission reductions are for the HOV lane only.

The analysis is performed as follows:

a) Calculate the existing VOC emissions.
$VOC_B = EF_B * VOL_B * DIST$

where,
VOC_B = Emissions before improvement, grams
EF_B = Emission factor (grams per mile) based on assumed speed before improvement
VOL_B = HOV Volume * Auto Occupancy of HOV / AO of Mixed Flow
DIST = HOV lane distance in miles

b) Determine the average speed after the improvement.

c) Calculate the VOC emissions after the improvement.
$VOC_A = EF_A * VOL_A * DIST$

where,
VOC_A = Emissions after improvement, grams
EF_A = Emission factor (grams per mile) based on average speed after improvement
VOL_A = HOV Volume after improvement

d) Calculate daily VOC emission reductions.
$VOC_R = (VOC_B - VOC_A)$

where,
VOC_R = VOC emission reductions, grams/day

Transit Improvements

1. General Analysis

The key to Transit Improvements is increased ridership. If transit ridership goes up then Vehicle Miles of Travel (VMT) should be reduced proportionately. The approach to this analysis is trend, that is, the analysis should call on previous expansions and their effect on ridership as input into the analysis. Since this increased ridership actually decreases VMT, reductions are found for both VOCs and NO_x.

The analysis is as follows:

a) Calculate the daily VMT reduction.
VMT = (Avg. Daily Ridership After - Avg. Daily Ridership Before) / Avg. Auto Occupancy * Avg. Trip Length

b) Calculate the reduction in daily emissions.
$E_D = EF_x * VMT$

where,
E_D = Daily Emissions, grams/day
EF_x = Emission factor for pollutant x, grams/mile
VMT = vehicle mile/day

2. Express Bus Service for Broward County, Florida[3]

The analysis of this project was done to add new Express Bus Service in Broward County Florida. The basis for the project was to provide a needed service to the general public and reduce Vehicle Miles of Travel (VMT). The new transit service will operate during the morning (AM) and afternoon (PM) peaks. The AM peak will consist of three one-way trips from southwest Broward County to Downtown Fort Lauderdale with one return trip. The PM peak will consist of the reversal of the AM peak. Each peak is considered for exactly two hours (6:00AM to 8:00AM and 4:00PM to 6:00PM). The analysis for the project is as follows:

a) The Peak Hour Ridership was determined by running the FSUTMS model (Florida's Travel Demand Model). Both the AM and PM peak ridership were calculated by multiplying the peak hour ridership by 2.0 hours to yield Person Trips.
Peak Hour Ridership (from FSUTMS) = 54 Person Trips
AM Peak = 2.0 Hours * 54 = 108 Person Trips
PM Peak = 2.0 Hours * 54 = 108 Person Trips
Daily Person Trips = 108 + 108 = 216 Person Trips

b) An estimate of auto trips is found by dividing the person trips by the average auto occupancy for Home Based Work (HBW) trips.

216 Person Trips / 1.12 = 193 Auto Trips

c) An estimate of VMT is then calculated by assuming the auto trips would have taken the same trip length as the new service or 31.0 miles.
193 Auto Trips * 31.0 Miles/Trips = 5983 Daily VMT

d) The daily reduction in NO_x and VOC is found from MOBILE 5.0a using Light Duty Gas Vehicle (LDGV) emission rates. The average speed is derived from the average auto travel speed along the proposed transit route, which is 37.9 mph.
NO_x emission reduction = 5983 VMT * 1.63 g/mile * kg / 1000 g = 9.75 kg/day

VOC emission reduction = 5983 VMT * 1.25 g/mile * kg / 1000 g = 7.48 kg/day

e) The increase in VMT due to the express service is then found with the knowledge that there are four trips per peak period, again, with a distance of 31.0 miles.
Daily Transit VMT Increase = 31.0 * 8 trips/day = 248 Daily VMT

f) The daily increase in NO_x and VOC is found from MOBILE 5.0a using Heavy Duty Diesel Vehicles (HDDV) emission rates. The average speed is derived from the average bus speed along the proposed route, which is 28.7 mph.
NO_x emission increase = 248 VMT * 1.8 g/mile * kg/1000g = 0.45. kg/day
VOC emission increase = 248 VMT * 11.68 g/mile * kg/1000g = 2.90 kg/day

g) The net reduction is then found.
NO_x emission reduction = [9.75 - 2.90] kg/day = 6.85 kg/day
VOC emission reduction = [7.48 - 0.45] kg/day = 7.03 kg/day

3. Transit Centers[1]

Transit centers combine frequent bus service with park and ride (P&R) lots. The main benefit of these facilities is to reduce VMT, thus allowing for a reduction in both ozone precursors. The analysis for these facilities/projects is as follows:

a) The first step in the analysis is to estimate the number of autos removed by the new facility.
Autos Removed = Historical P&R Lot Utilization * Parking Spaces in Lot

b) Next, knowing the average peak hour speed and the average driving distance for the area emission reductions can be found. Note: Distance is multiplied by 2 to account for round trip.
Auto Emission Reduction = Autos Removed * (Avg. Driving Distance * 2) *Peak Hour Speed Emission Rate for LDGVs

c) Calculate the emissions from the increase in transit vehicles, utilizing known Avg. Driving Distance and Avg. Peak Hour Speed.
Bus Emission Increase = # of Bus Increase * (Avg. Driving Distance * 2) *Peak Hour Speed Emission Rate for HDDVs

d) The final calculation yields emission reductions in kg/day.
Daily Emission Reductions = (Auto Reductions - Bus Increase) * kg/1000g

4. Park and Ride Lots[1]

The P&R lot analysis is similar to the analysis of the transit center with the exception that increased bus service is not added. The analysis is as follows:

a) The first step in the analysis is to estimate the number of autos removed by the new facility.
Autos Removed = Historical P&R Lot Utilization * Parking Spaces in Lot

b) Next, knowing the average peak hour speed and the average driving distance for the area the total emission reductions can be found in, kg/day.
Auto Emission Reduction = Autos Removed * (Avg. Driving Distance * 2) *Peak Hour Speed Emission Rate for LDGVs * kg/1000g

Note: Distance is multiplied by 2 to account for round trip.

5. Alternative Fuel Buses[14]

Broward County, FL proposed to buy 4 alternative fuel (electric) transit buses to operate as circulators in Downtown Ft. Lauderdale. The purpose of this analysis is to demonstrate that using electric buses instead of the heavy-duty diesel buses will improve air quality.

Assumptions

- Buses will operate weekdays between 7:30 am and 5:30 pm (10 hours)
- 30 minute (0.5 hour) headway between buses per route
- Number of Daily Trips = Operation/Headway = 10 hours/0.5 hours = 20 Trips
- Average bus running speed is 14.4 mph
- Electric buses were assumed to produce zero emissions
- MOBILE model was used to obtain HDDV emission rates
- Round Trip distance is approximately 4.8 miles.

Analysis

a) Estimate emissions due to operating 4 diesel buses.

Emissions = Number of Buses * Round Trip Length * Number of Daily Trips * Emission Factor

VOCs = 4 buses * 4.8 round trip miles * 20 trips/day * 0.0030 kg/mile = 1.15 kg/day
CO = 4 buses * 4.8 round trip miles * 20 trips/day * 0.0163 kg/mile = 6.26 kg/day
NOx = 4 buses * 4.8 round trip miles * 20 trips/day * 0.0149 kg/mile = 5.72 kg/day

b) The above values reflect the emissions that would be reduced by replacement of the diesel buses with alternatively fueled buses thus showing an improvement in air quality.

6. Tampa Historic Electric Streetcar[15]

The proposed historic street car, when completed, provides intermodel connections for persons who arrive at the Convention Center or one of the hotels from Tampa International Airport and who have taken a taxi to downtown. To calculate emission benefits the following methodology was used.

a) Ridership projections were obtained from annual attendance figures estimated by the City of Tampa, Ybor City, the Port Authority, the Tampa Bay Lightning, the Florida Aquarium, and the Tampa Convention Center. Ridership figures were also based on the Memphis, TN streetcar project. The Memphis project is given reference since the attractions along the system are more relative to that of the Tampa/Ybor area. Based on the Memphis project a conservative 5% ridership at each of these venues was used for calculations. To estimate the miles saved an assumption was made that half of the estimated 5% ridership would ride the streetcar the 4.5 mile round trip between Ybor City and the Garrison Seaport District and the other half would ride shorter 2 mile trips.

	Yearly Projected Attendance	5% Ridership Assumption
Arena (Tampa Bay Lightning)	800,000	40,000
Aquarium	1,000,000	50,000
Crosstown-Ybor	1,320,000	66,000
Cruise Ships	300,000	15,000
Hogan Burke Theater	1,000,000	50,000
Hotels-Convention Center		
Convention Center	112,000	5,600
Special Events	305,000	15,250
Hyatt Regency	201,000	10,050
Local Events		
Guavaween	75,000	3,750
St. Patricks/Jose Riley	4,000	200
Gasparilla	100,000	5,000
Special Weekend	75,000	3,750
Total		264,600

b) Calculate VMT reductions.
132,300 passengers travel 2.0 miles round trip = 264,600
132,300 passengers travel 4.5 miles round trip = 595,350

Total = 859,950 miles/year = 2356 miles/day

c) Calculate emission reductions achieved from the program.

Emission Reductions = VMT * Emission Factor

VOCs = 0.0014 kg/mile * 2356 mile/day = 3.3 kg/day
CO = 0.0114 kg/mile * 2356 mile/day = 27 kg/day
NOx = 0.002 kg/mile * 2356 mile/day = 5 kg/day

7. Bus Bays on Oakland Park Boulevard[16]

Broward County proposed to build 5 transit bus-bays along Oakland Park Boulevard between Andrews Avenue and Inverrary Boulevard. Currently there are three transit routes that provide service and make frequent stops along that segment of Oakland Park Blvd. The purpose of this analysis is to demonstrate that building bus bays will improve air quality by estimating the reduction in time loss due to buses stopping to load and unload passengers. The concept is based on the reductive effects of local transit buses on the traffic carrying capacity of an arterial street. The concept in Chapter 12 of the 1994 Highway Capacity Manual (HCM) was used to estimate that reduction. For comparison purposes, traffic carrying capacity of Oakland Park Blvd. was evaluated under two conditions: one with bus bays and the other without.

In the first case, (with bus bays), buses stop in a lane that is not used by moving traffic (curb parking lane), thereby reducing the impeding effects to other traffic. The time loss to other vehicles due to bus stopping at a bus bay is estimated at 4 seconds per bus which counts for bus acceleration and deceleration time in the traffic stream.

In the second case, buses stop in the normal traffic lane impeding traffic flow and causing queuing of vehicles behind the stopped bus. The time loss in this case includes the dwell time to load and unload passengers and time loss for stopping and starting. The time loss for the lane in which the bus operates can be estimated using equation 12-3 of the HCM.

TL = (g/c)*N*(D+L) where,

TL = time loss, in seconds per hour
g/c = intersection green time/cycle time ratio
N = number of buses that stop per hour
D = average dwell time, in seconds
L = additional time loss due to stopping, starting and queuing in seconds (6 to 8 seconds on average).

The analysis covers the impact of constructing five bus bays and to simplify the calculations, the reduction was estimated for one bus bay and then multiplied by five.

Assumptions

- Three bus routes operate along the subject segment of roadway
- 30 minute headway per route
- Number of buses (3*60/30) = 6 buses per hour
- Buses operate 16 hours/day average weekday
- The average speed along Oakland Park Blvd is 24.5 mph

Calculation of Loss Time with Bus Bays

The time loss is due to buses maneuvering in and out of bus bays.

Timeloss/hour = 4 seconds/bus * 6 buses/hour = 24 sec/hr

Where,

Time lost due to bus decel and accel out of bus bay, TL = 4
Number of buses per hour, N = 6
Average g/c = 0.4
Capacity of through lane = 1800 pcphpg (passenger cars per hour per green)
Capacity of one lane per hour at 0.4 g/c ratio = 1,800 * 0.4 = 720 pcphpg
Total green time available to through lanes is 0.4 * 3,600 sec/hour = 1,440 sec/hour

The percent loss in lane capacity may be expressed as:

(24 sec/hr / 1,440 sec/hour) * 100 = 1.7%

This results in a capacity loss in the right lane of 720 pcph * 0.017 = 12 pcph

Calculation of Loss Time without Bus Bays

The average dwell time using results from a field survey is 18 seconds per stop.

with,
g/c = 0.4
N = 6 buses/hr
D = 19 sec/bu
L = 6 sec/bus
TL = 0.4*6*(18+6) = 58 sec/hour

The percent loss in lane capacity is; (58/1,440)*100 = 4.03%

This results in a capacity loss in the right lane of 720 pcph * 0.0403 = 29 pcph

Emission Reduction Estimate

Net Capacity gain due to building Bus Bays = 29 - 12 = 17 pcph

The distance of the highway impacted by each bus bay is 500 feet

Net VMT gained by installing Bus Bays = (500 ft/ 5280 ft/mile) * (17 pcph * 16 hours/day)
= 26 mile/day

The average travel speed is 24.5 mph

VOCs = 26 mile/day * 2.31 g/mile * kg/1000g * 5 locations = 0.30 kg/day
CO = 26 mile/day * 20.31 g/mile * kg/1000g * 5 locations = 2.64 kg/day
NOx = 26 mile/day * 2.48 g/mile * kg/1000g * 5 locations = 0.32 kg/day

Vanpool Programs

1. General Analysis

Vanpools achieve emission benefits by reducing vehicle trips. Average commute distance is doubled to simulate a round trip. Average ridership should be based on historical vanpool size data obtained from the Metropolitan Planning Organization (MPO). The analysis is performed as follows:

a) Calculate vehicles removed by the vanpool.
VMT removed = Historical Vanpool Size / Avg. Vehicle Occupancy

b) Calculate the Daily Emission Reduction achieved by the reduced VMT, kg/day.
ER = VMT removed * Avg. Commute Length * 2 * Peak Hour Speed Emission Rate (LDGV) for Pollutant * kg/1000g

2. Dade County, Florida Vanpool Program[4]

The Dade County Vanpool Program provided 30 vans to qualified participants. Air quality benefits are achieved through the reduction in VMT associated with the reduction of individual commuters. The increase in vehicles due to the vans provides a somewhat negative offset of these benefits. The analysis consists of five steps.

1) Estimate the number of autos removed from the roadway by the vanpool program.
2) Calculate the Daily VMT eliminated.
3) Calculate the emission reductions due to the decrease in VMT.
4) Calculate the addition emissions generated by the new service.
5) Derive the Net Benefits from the Program.

The following provides an example.

a) Reduction in Automobile use is calculated by knowing the amount of seating and the average area auto occupancy. The total seating provided by the vanpool is 345 seats, divided into vans with capacities of 15 and 8 passengers. The average auto occupancy of Dade County is 1.22 persons per automobile. The calculation is as follows:
Autos Eliminated = Vanpool Seats / Auto Occupancy = 345 Seats / 1.22 Persons / Auto = 283 Autos

b) VMT reduction is calculated through the knowledge of average round trip commuter distance for Dade County.
VMT Reduction = Autos Eliminated * Average Commute Distance = 283 Autos * 21.8 Miles / Auto
= 6169 Miles

c) Emission Reductions are found by using the appropriate emission rate for LDGVs.
The Average operating speed for Dade County is 27 mph.
Emission Reduction = Emission Rate * VMT * kg/1000g
Emission Reduction = 81.49 kg/day CO; = 10.49 kg/day VOC; = 10.12 kg/day NO_x

d) Emission increases, due to the implementation of the new vehicles, are calculated knowing the emission rate for Light Duty Gas Trucks (LDGTs) and the VMT for the fleet. The VMT is derived from the fleet size and the average Dade commute distance, previously noted, or 654 VMT.
Emission Reduction = Emission Rate * VMT * kg/1000g
Emission Reduction = 10.63 kg/day CO; = 1.33 kg/day VOC; = 1.22 kg/day NO_x

e) The Net Air Quality difference is thus a product of the Reductions calculated in step c) subtracted by the Increases in emissions calculated in step d).
CO = 70.86 kg/day
VOC = 9.16 kg/day
NO_x = 8.90 kg/day

Other Off-Model Methodologies

1. Incident Management[1]

The main goal of an Incident Management Program is to reduce congestion by removing vehicles which are debilitated, injured or just broke. Nonrecurring Congestion is the effect these vehicles have on the main line flow. Excess freeway emission are caused by this type of congestion. This analysis provides the basis for calculation of reduction of VOCs due to these programs; however, NO_x can be analyzed in a similar fashion.

a) Determine Regional Freeway VOC Emissions, E_B.

b) Determine Freeway Emissions due to Nonrecurring Congestion, E_C.
$E_C = E_B * 0.049$

Note: 4.9 Percent of Freeway Emissions are Caused by Nonrecurring Congestion.[5]

c) Next the Daily VOC reductions, E_D, are calculated. These assume, since freeway emissions are directly related to VMT, that the VMT in the program area is used to calculate emission reductions.
$E_D = L * VOL_i * E_C / VOL_T * EFF$

where,
L = Length of Freeway
VOL_i = Volume of Freeway i
VOL_T = Regional Freeway VMT
EFF = Project Effectiveness, 50% for Incident Detection and Response,
25% for Motorist Assistance, and 15% for Surveillance.

2. Pedestrian / Bikeway - General[1]

The main goal of bicycle and pedestrian facilities is to provide other transportation options for a community. The air quality benefits, as with most projects, come with a reduction in VMT. The general calculation for these projects is shown below.

a) First, calculate the Daily VMT reduction.
VMT Reduction = PD * Area * L * BMS

where,
PD = Population density of location, persons/mile^2
Area = Project length * 1 mile radius, mile^2
L = Round trip length, one-half of the project length times 2 daily trips, miles
BMS = Bike mode share, %

b) Last, calculate the Daily Emission reductions for a pollutant.
$E_D = EF_x$ * VMT Reduction

where,
E_D = Daily Emissions, grams/day
EF_x = Emission factor for pollutant x, grams/mile
VMT = vehicle mile/day

3. Bikeways - General

Little data is available on the utilization of bikeways; however, if such data is available it can prove invaluable in providing mode shift data to predict VMT reduction. The following is an analysis which shows how to calculate emission reductions if a history of mode shift percentage is known.

a) First Calculate daily VMT reduction provided by mode shift in the corridor.
VMT Reduction = AADT in the corridor * PMS

where,
PMS = historical percentage of mode shift for area

b) Last, calculate the Daily Emission reductions for a pollutant.
$E_D = EF_x$ * VMT Reduction

where,
E_D = Daily Emissions, grams/day
EF_x = Emission factor for pollutant x, grams/mile
VMT = vehicle mile/day

4. Sidewalks Near Schools in Farragut, Tennessee[6]

This project connected and extended previously constructed sidewalks along the parental responsibility zone of the Farragut schools. This analysis assumes a minimum usage increase of 10%, with a VMT reduction of 2 miles on arterials and 5 miles on local roads. There are 5,602 students in Farragut schools. It should be noted that students walking remove 4 vehicle trips. The analysis is as follows:

a) Since VMT is reduced on both arterials and local roads, there are two VMT reduction calculations.
Students with Travel Mode Change = 5602 *.10 = 560
VMT Reduction (Arterials) = 560 Persons * 2 Miles / Person = 1120
VMT Reduction (Local) = 560 Persons * 5 Miles / Person = 2800

b) Knowing the Average Speed for the given roadway classification emission factors are generated for both VOC and NO_x by roadway classification.
VOC Reduction = (1120 VMT * .00194 kg/mile) + (2800 VMT * .00227 kg/mile) = 8.6 kg/day

NO_x Reduction = (1120 VMT * .0022 kg/mile) + (2800 VMT * .0019 kg/mile) = 7.8 kg/day

5. I/M Compliance Changes, Texas[1]

Procedures leading to a higher compliance rate for a I/M program benefit air quality by detecting then repairing faulty emission control systems. The Texas Air Control Board was asked to supply projected compliance rates for changes to our current I/M system. Current compliance rates for each county are available from TACB. Emission benefits are calculated with the following equations:

a) The first step is to calculate the emission rates before and after a change in compliance rates, g/day.
Improved Emissions = Projected I/M compliance * AADT * 24hr Avg. Speed Emissions
Previous Emissions = Current I/M compliance * AADT * 24hr Avg. Speed Emissions

b) The final step is to calculate the Daily Emission benefit due to the increased compliance rate, kg/day.
Daily Reductions = (Improved Emissions - Previous Emissions) * kg/1000g

6. Travel Demand Management (TDM), Public Education Campaign, Pinellas County, Florida

The purpose of this project was to provide intermodal transportation information via several programs within a public education campaign to promote a shift from the use of single occupant vehicles (SOV) to alternatives such as bicycle, public transportation, and ridesharing. By educating the public to these transportation options and their cost effectiveness, a substantial number of vehicles could be eliminated from the roadway, thus reducing VMT.

a) The first step in the analysis is to combine the knowledge of Work Trips for the area with the Trip Rate. Pinellas County has an estimated employment of 377,312. Knowing the Home Based Work Trip Rate is 1.8, provided by the FSUTMS model, Daily work trips can be calculated.

Daily Work Trips = Total Employment * Trip Rate = 377,312 * 1.8 = 679,162 Trips

b) The 1991 Tampa Bay Regional Survey conducted by Florida Department of Transportation provided Trip Length Distribution information. This survey showed the Mean Trip Length was 26.6 minutes, reflecting travel time and terminal times. Using an average area speed of 19.6 mph the Average Trip Length can be calculated.

Average Trip Length = Average Travel Speed * Mean Trip Length * hr / 60min = 19.6 miles/hr * 26.6 min * hr / 60min = 8.68 miles

c) Next the VMT reduction can be found with the knowledge of the Daily Work Trips and Average Trip Length.

Work VMT Reduced = 679,162 * 8.68 miles = 5,895,123

d) Based on a study conducted by STAPPA/ALAPCO an estimated percent reduction in work travel VMT was found to be 0.5 %.[8] Therefore, the VMT Reduction due to the implementation of the Public Education Campaign is:

VMT Reduction = 5,895,123 * 0.5 = 29,476

e) The final step is to calculate the emission reductions using MOBILE emission factors for the known Average Speed of 19.6 mph.

Emission Reduction = VMT * Emission Factor (g/mile) * kg/1000g
VOC Reduction = 29,476 * 2.36 g/mile * kg/1000g = 69.6 kg/day
NO_x Reduction = 29,476 * 2.46 g/mile * kg/1000g = 72.5 kg/day
CO Reduction = 29,476 * 20.38 g/mile * kg/1000g = 600.7 kg/day

7. Ramp Metering[9]

Project/Policy Description

Ramp metering is a common form of urban traffic control. It aims to reduce or eliminate operational problems resulting from freeway congestion by restricting flow to the freeway mainline. With mainline demand restricted to less than the available capacity, ramp metering tends to maintain uninterrupted, non-congested flow on the freeway. By smoothing vehicle flow, ramp metering aids in utilizing the existing freeway capacity and also reduces the probability of accidents at merge locations.

The total change in vehicle emissions due to ramp metering can be broken down into 3 elements: travel changes on the mainline, travel changes on the arterial street system, and changes in operating conditions on the ramp. All three elements are affected by the changes in traffic volumes resulting from ramp metering, including increased traffic volumes on the arterial street system. Emissions on the ramp change because of the changes in the way the ramp is operating. Ramp metering results in greater vehicle idling and greater acceleration on the ramp then is experienced without ramp metering. The travel demand forecasting model accounts for emissions resulting before the implementation of ramp metering. Therefore, the change in emissions before and after ramp metering is calculated in this analysis so that the difference can be applied to the total regional emissions from the travel demand forecasting model.

Assumptions

1) Vehicles entering at on-ramps are not experiencing delay before the implementation of ramp metering.
2) Emissions associated with the change in acceleration/deceleration on the ramps are negligible compared to emissions resulting from the increases in travel speeds on the freeway mainline.
3) Ramps are only metered until the maximum storage capacity of the ramp is met. After that time, ramp metering is turned off.
4) Queuing emissions on the ramp include that emission of the vehicle traveling on the ramp at low speeds.
5) No consideration was given to concurrent use of HOV facilities in the ramp metering corridor.

Emissions Analysis

a) Determine the freeway limits and time period for the ramp metering. Considerations for the implementing ramp metering are discussed in the*Manual on Uniform Traffic Control Devices* and the NCHRP Report 232, *Guidelines for Selection of Ramp Control Systems,* Page 52. The Florida DOT used freeway volume after the merge point and speed to determine if ramp metering was warranted as documented in the *Southeast Florida Intelligent Corridor System Ramp Metering Analysis.*

b) Obtain volumes (HPMS adjusted), capacities, and speeds of travel demand network links for all freeways, ramps, arterial cross streets and parallel cross streets which will be affected by ramp metering.

c) Calculate total emissions before ramp metering for the time period when ramp metering will be implemented (such as the peak period):
Total Emissions = 3 ($LENGTH_i$ x #$VEHICLES_i$ x $EMISSIONS\ RATE_i$)

where,
i = 1 to n, and n is the number of links

d) Determine ramps to be metered and their associated storage capacity and metering rates. Ramp metering rates can be determined by first calculating the reduction in demand required to result in the desired mainline operating condition. After the mainline difference is calculated, the difference is distributed between the upstream ramps. The metering rate will be dependent on the required reduction, the demand at the particular on-ramp and the storage capacity of the ramp.
The recommended minimum metering rate is 300 vehicle per hour (for a one-lane ramp), and the recommended maximum is 900 vehicles per hour (for a one lane ramp)[10].

e) Calculate total ramp delay and the maximum individual waiting time due to the implementation of ramp metering. These can be calculated using basic queuing diagrams of number of vehicle accumulated over time (see example in Figure 1).

f) Estimate the diversion of vehicles to the parallel arterial. The number of vehicles diverting will be a function of trip length, queue length, ramp delay, and the availability and efficiency of alternate routes[11].

g)Adjust volume/capacity ratios for all links as needed to account for ramp metering (queuing on the ramp) and diversion.

h) Calculate new freeway, cross street arterial and parallel arterial speeds using the travel demand model volume/delay curves.

i) Calculate after metering emissions based on new link volumes, capacities and speeds. Freeway and arterial link emissions can be calculated as described in step 3.

j) For the on-ramps, calculate queuing emissions as follows:
Total Emissions = Total Delay x Emissions $Rate_{Idling}$

k) Calculate the difference between before metering and after metering emissions.

l) Calculate emission differences for all peak periods which are metered.

m) Apply the total difference in emissions for all peak periods to the total emissions calculated from the travel demand model output (total emissions before metering).

Caveats

1) The congestion mitigation benefits of ramp metering are conservative since the methodology is based on average annual daily traffic and no incident delay is incorporated into the analysis. Ramp metering will reduce incidents at the freeway merge and the associated vehicle delay.

2) The emissions estimate assumes that there will be no change in demand as a result of the ramp metering. The same number of vehicle trips will be made although they may be diverted to the arterial street systems. The methodology does not take into consideration latent demand that may be generated with better operations on the freeway; in the forecast years, this will be less critical due to the fact that demand will probably greatly exceed capacity.

8. University North Commuter Center[13]

The University North Commuter Center will offer information and related services to promote greater use of a range of commuter alternatives to SOV travel, including public transit, ridesharing, bicycling, walking, telecommuting and others. Services include a staffed information center, located at the University Mall, a transportable kiosk for special events within University North, a "Virtual Commuter Center" web page, and covered bicycle storage units available to participating employment sites. The analysis is as follows:

a) Estimate the number of users/participants, users. 400 new users.

b) Estimate gross vehicle trip reduction (VTR) based on mode shifts. Gross one-way vehicle trips reduced = users * mode Trip Reduction Factor (TRF).

	Users	TRF	Daily Trips	Gross Trips Reduced
New Carpooler	210	0.5	2	210
New Vanpooler	10	0.9	2	18
New Transit User	100	1	2	200
New Bicyclist	50	1	2	100
New Walker	20	1	2	40
New Telecommuter	10	1	2	20
New Compressed Work Week	0	1	2	0
New Satellite Work Center User	0	0	2	0

Total Gross Trips Reduced = 588

c) Fraction of users or participants using prior HOV and/or SOV access, in percent.

HOV% = 10.0

d) Determine net VTR. Net Vehicle One-way trips reduced = Gross VTR * (1 - HOV%/100)

Net VTR = 588 * (1 - 10/100) = 529.2

e) Determine vehicle miles of travel reducted (VMT). Average one way trip length = 11 miles/trip.

Reduced VMT = Net VTR * Average Trip Length = 529.2 * 11 = 5821.2

f) Determine daily emissions reduced. Daily Emissions Reduced = Emission Factor * Reduced VMT
CO Reduced = 5821.2 mile/day * 0.0114 kg/mile = 66.4 kg/day
NOx Reduced = 5821.2 mile/day * 0.0020 kg/mile = 11.6 kg/day
VOC Reduced = 5821.2 mile/day * 0.0014 kg/mile = 8.1 kg/day

9. Qualitative Analysis - Intermodal Transit Links[12]

Project Description

The study will examine transit system connections withing the Downtown and a Historic Area that will coordinate with other transportation components such as parking and bicycle / pedestrian facilities.

Purpose

The proposed CMAQ grant will fund a study which examines opportunities to improve the efficiency of transportation services in the Downtown and a Historic area. This project will examine optimal transfer of locations for intermodal connections between all modes of transportation including an electric streetcar, future rail transit, buses, bicyclists, pedestrians, and automobiles. Parking availability and opportunities will also be analyzed.

Project Justification

Effective intermodal connections are essential to an efficient transportation system. This study will identify optimum locations for intermodal transfers to reduce vehicular congestion, idle times in buses and automobiles, and overlapping transit service. In addition this analysis will identify ways to improve service and public use for through trips and intermodal connections by improving or streamlining routes and improving and adjusting headways. The air quality benefits derived from this project are difficult to quantify. However, for the purposes of this analysis, it is assumed that efficient intermodal connections will achieve a substantial reduction in the overall mobile source emissions in the study area for several reasons.

- Increased transit ridership attributed to better connectivity
- Amenities for pedestrians and cyclists (information kiosks, bike racks, shelters)
- Increased use of non-motorized travel
- Less vehicle idle times waiting for connections
- Reduced, shorter internal trips, less cold starts

References

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5. "Urban Freeway Congestion: Quantification of the Problem and Effectiveness of Potential Solutions", Jeffrey A. Lindley, 1987.

6. State of Tennessee Annual Report on CMAQ, *Sidewalks Near Schools in Farragut*, 1995.

7. Pinellas County MPO, *CMAQ Justification Analysis: Public Education Campaign for New Transportation Ethics, Five Projects*, February, 1995.

8. STAPPA/ALAPCO, "Meeting the 15-Percent Rate-of-Progress Requirement Under the Clean Air Act: A Menu of Options", September, 1993.

9. *Regional Ramp Metering System Analysis*, Jean Mazur and Andy Edwards, FHWA, 1997.

10. *Traffic Control Systems Handbook*, FHWA, February, 1996.

11. "Guidelines for the Selection of Ramp Control Systems", NCHRP Report 232, May, 1981.

12. CMAQ Project Review and Concurrence - Planning - FDOT District 7, *Intermodal Transit Links Analysis*, Hillsborough County Metropolitan Planning Organization, 1997.

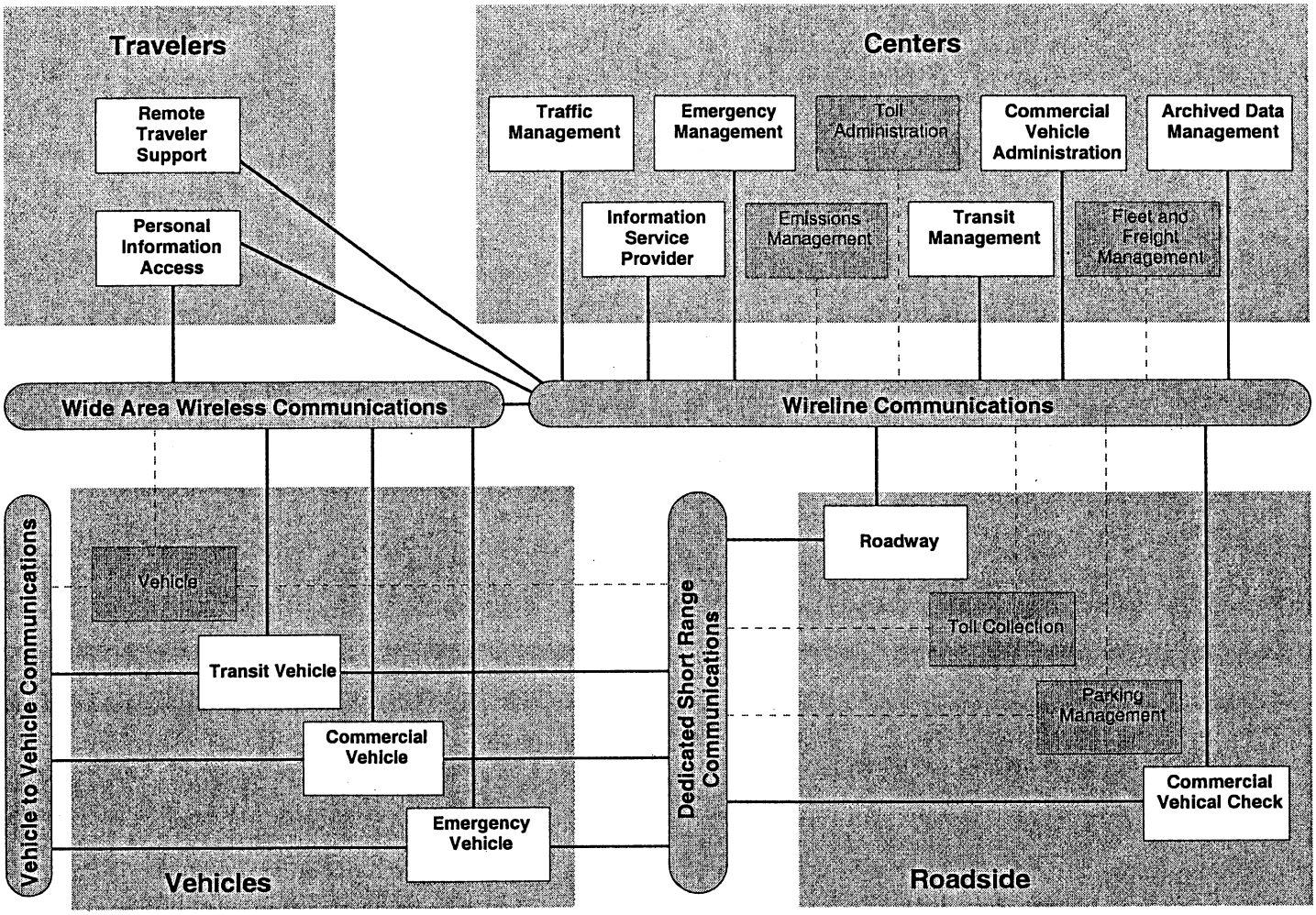
13. CMAQ Project Summary, *University North Transportation Initiative*, University of South Florida, 1998.

14. *Broward County CMAQ Justification Report Alternative Fuel Buses*, April, 1997.

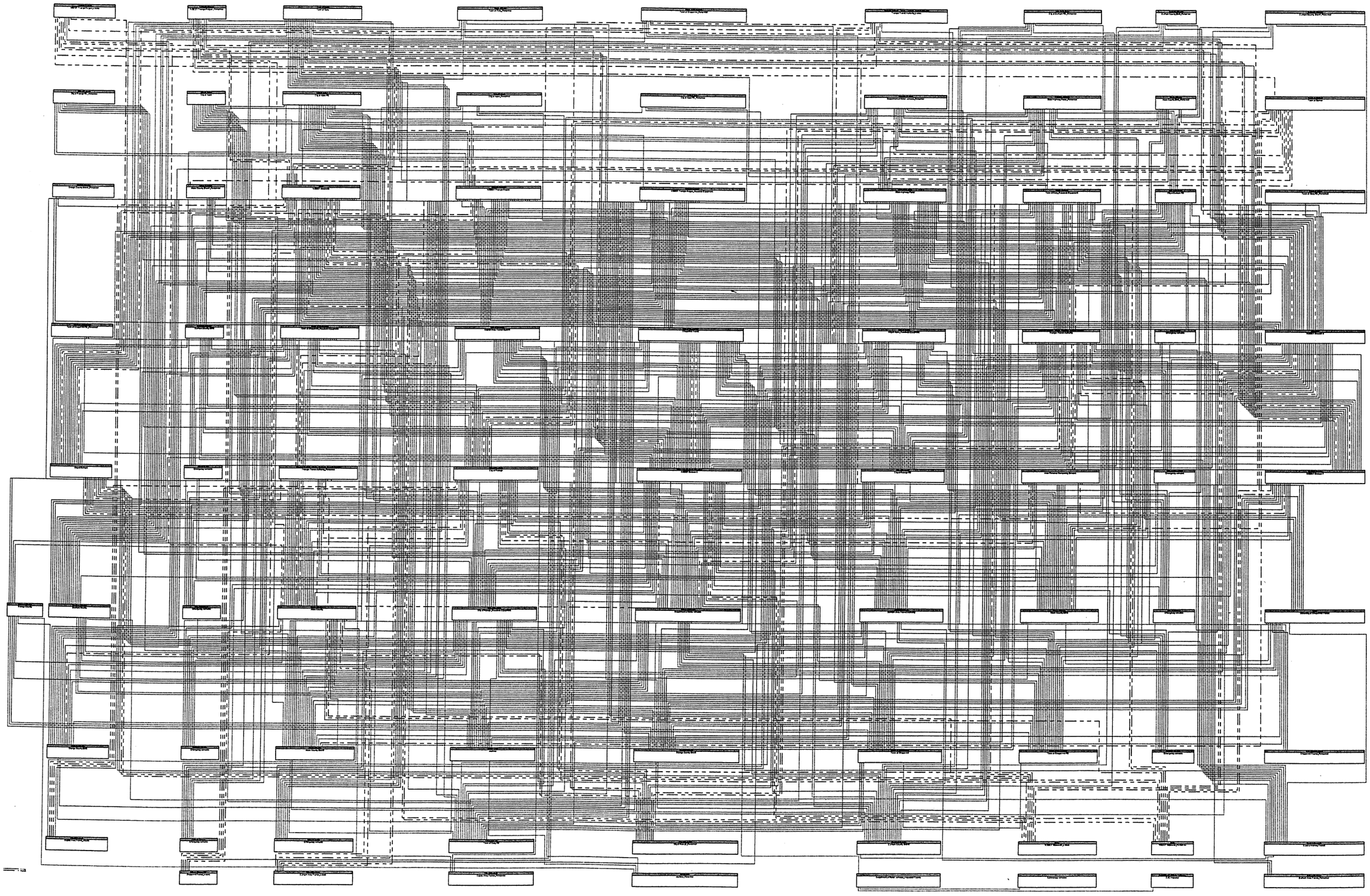
15. CMAQ Project Review and Concurrence - Planning - FDOT District 7, *Tampa Historic Electric Streetcar*, Hillsborough County Metropolitan Planning Organization, 1996.

16. *Broward County CMAQ Justification Report for Bus Bays on Oakland Park Boulevard*, April, 1997.

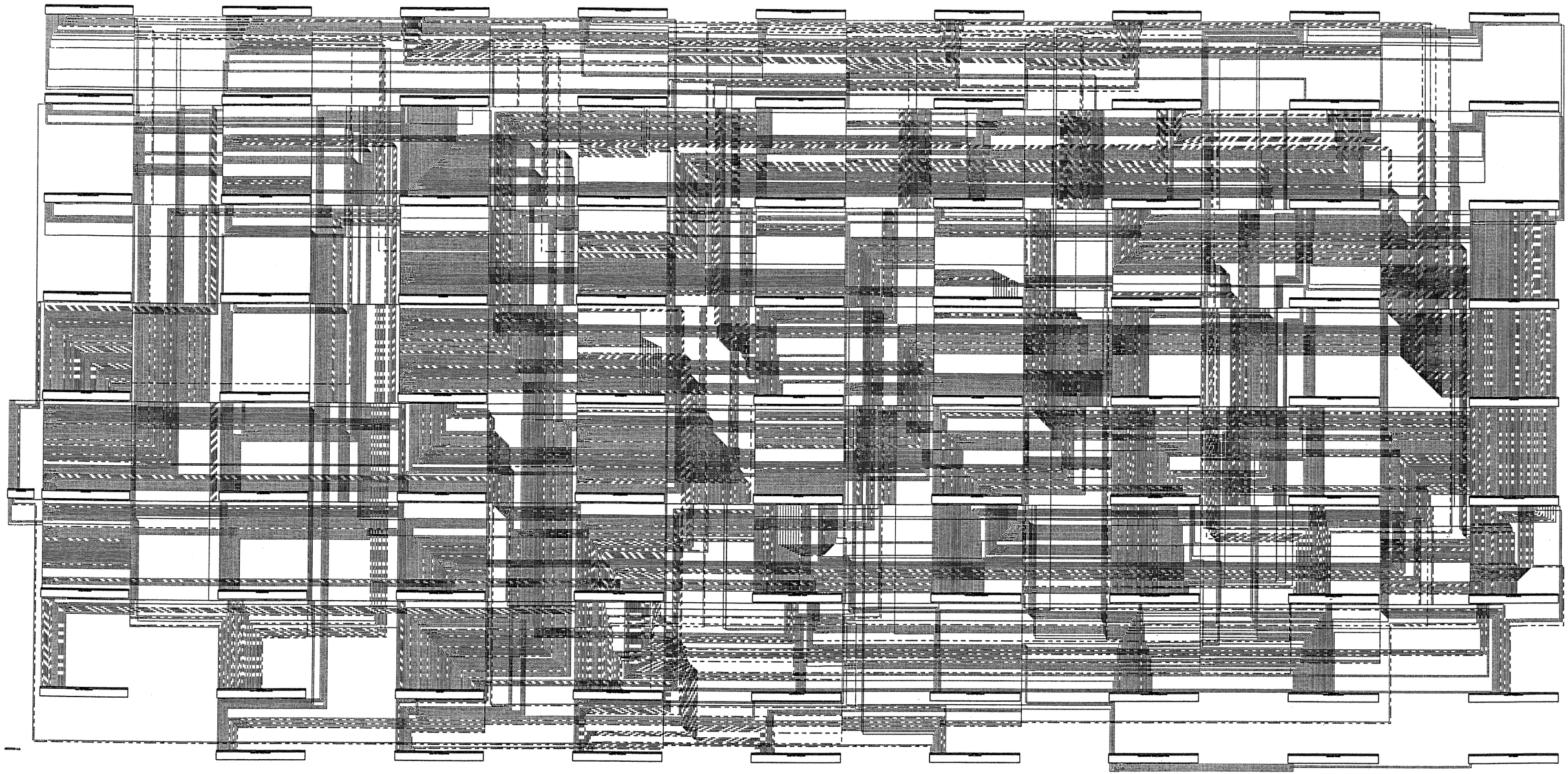
Triangle Region Sausage Diagram



Triangle Turbo Architecture Interconnect Diagram



Triangle Turbo Architecture Flow Diagram



Inventory to Market Package Comparison

Entity Name	Type	Element Name	
The following System(s) are in the inventory, but do not participate in any of the selected Market Packages			
Archived Data Management Subsystem	*Subsystem*	NCDOT Statewide	
Government Reporting Systems	*Terminato*	NCDOT Statewide	
Archived Data Management Subsystem	*Subsystem*	Town of Garner	
Archived Data Administrator	*Terminato*	Town of Garner	
Archived Data User Systems	*Terminato*	Town of Garner	
Market Package: Advanced Railroad Grade Crossing			
Traffic Management	*Subsystem*	City of Raleigh	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Cary	
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	
Driver	*Terminato*		Not in Inventory
Pedestrians	*Terminato*		Not in Inventory
Traffic	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Rail Operations	*Terminato*	City of Durham	Not Selected
Rail Operations	*Terminato*	City of Raleigh PD	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Wayside Equipment	*Terminato*	NCDOT Triangle Region	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Market Package: Broadcast Traveler Information			
Emergency Management	*Subsystem*	City of Raleigh	
Information Service Provider	*Subsystem*	City of Raleigh	
Traffic Management	*Subsystem*	City of Raleigh	
ISP Operator	*Terminato*	City of Raleigh_Personnel	
Information Service Provider	*Subsystem*	NCDOT Statewide	
Media	*Terminato*	NCDOT Statewide	
Traveler	*Terminato*	NCDOT Statewide	
Remote Traveler Support	*Subsystem*	NCDOT Statewide_Kiosks	
ISP Operator	*Terminato*	NCDOT Statewide_Personnel	

Entity Name	Type	Element Name	
Market Package: Broadcast Traveler Information			
Information Service Provider	*Subsystem*	NCDOT Triangle Region	
Traffic Management	*Subsystem*	NCDOT Triangle Region	
ISP Operator	*Terminato*	NCDOT Triangle Region	
Remote Traveler Support	*Subsystem*	NCDOT Triangle Region_Kiosks	
ISP Operator	*Terminato*	NCDOT Triangle Region_Personnel	
Information Service Provider	*Subsystem*	Triangle Transit Authority	
Transit Management	*Subsystem*	Triangle Transit Authority	
Remote Traveler Support	*Subsystem*	Triangle Transit Authority_Kiosks	
ISP Operator	*Terminato*	Triangle Transit Authority_Personnel	
Personal Information Access	*Subsystem*	User Personal Computing Devices	
Information Service Provider	*Subsystem*	Wake County	
Transit Management	*Subsystem*	Wake County	
Emissions Management	*Subsystem*		Not in Inventory
Parking Management	*Subsystem*		Not in Inventory
Toll Administration	*Subsystem*		Not in Inventory
Vehicle	*Subsystem*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Weather Service	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not Selected
Remote Traveler Support	*Subsystem*	Capital Area Transit_Kiosks	Not Selected
Transit Management	*Subsystem*	Chapel Hill Transit	Not Selected
Remote Traveler Support	*Subsystem*	Chapel Hill Transit_Kiosks	Not Selected
Traffic Management	*Subsystem*	City of Apex	Not Selected
Emergency Management	*Subsystem*	City of Apex PD	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	City of Durham PD	Not Selected
Emergency Management	*Subsystem*	City of Raleigh PD	Not Selected
Emergency Management	*Subsystem*	Department of Motor Vehicles	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Management	*Subsystem*	Durham Area Transit Authority	Not Selected
Remote Traveler Support	*Subsystem*	Durham Area Transit_Kiosks	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	Durham County EMS	Not Selected
Emergency Management	*Subsystem*	Durham County Sheriff	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Media	*Terminato*	NCDOT Division 4	Not Selected
Traveler	*Terminato*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Media	*Terminato*	NCDOT Division 5	Not Selected
Traveler	*Terminato*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected

Entity Name	Type	Element Name	
Market Package: Broadcast Traveler Information			
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Division 7	Not Selected
Traveler	*Terminato*	NCDOT Division 7	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Emergency Management	*Subsystem*	Orange County Sheriff	Not Selected
Emergency Management	*Subsystem*	State Highway Patrol	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Emergency Management	*Subsystem*	Town of Cary PD	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Emergency Management	*Subsystem*	Town of Chapel Hill PD	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Emergency Management	*Subsystem*	Wake County EMS	Not Selected
Emergency Management	*Subsystem*	Wake County Sheriff	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Market Package: Demand Response Transit Operations			
Transit Management	*Subsystem*	Chapel Hill Transit	
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit	
Transit Fleet Manager	*Terminato*	Chapel Hill Transit_Personnel	
Transit Management	*Subsystem*	Durham Area Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority	
Transit Fleet Manager	*Terminato*	Durham Area Transit_Personnel	
Information Service Provider	*Subsystem*	Wake County	
Transit Management	*Subsystem*	Wake County	
Transit Vehicle Subsystem	*Subsystem*	Wake County	
Transit Driver	*Terminato*		Not in Inventory
Weather Service	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System	Not Selected
Transit Fleet Manager	*Terminato*	Capital Area Transit_Personnel	Not Selected
Traffic Management	*Subsystem*	City of Apex	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham County	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected

Entity Name	Type	Element Name	
Market Package: Demand Response Transit Operations			
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Management	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Fleet Manager	*Terminato*	Triangle Transit Authority_Personnel	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wolfline	Not Selected
Transit Fleet Manager	*Terminato*	Wolfline_Personnel	Not Selected
Market Package: Electronic Toll Collection			
Information Service Provider	*Subsystem*	Triangle Transit Authority	
Toll Administration	*Subsystem*		Not in Inventory
Toll Collection	*Subsystem*		Not in Inventory
Vehicle	*Subsystem*		Not in Inventory
DMV	*Terminato*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Financial Institution	*Terminato*		Not in Inventory
Payment Instrument	*Terminato*		Not in Inventory
Toll Administrator	*Terminato*		Not in Inventory
Toll Operator	*Terminato*		Not in Inventory
Vehicle Characteristics	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Enforcement Agency	*Terminato*	City of Apex PD	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Enforcement Agency	*Terminato*	City of Durham PD	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Enforcement Agency	*Terminato*	City of Raleigh PD	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Enforcement Agency	*Terminato*	Durham County EMS	Not Selected
Enforcement Agency	*Terminato*	Durham County Sheriff	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected

Entity Name	Type	Element Name	
Market Package: Electronic Toll Collection			
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Enforcement Agency	*Terminato*	Orange County EMS	Not Selected
Enforcement Agency	*Terminato*	Orange County Sheriff	Not Selected
Enforcement Agency	*Terminato*	State Highway Patrol	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Enforcement Agency	*Terminato*	Town of Cary PD	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Enforcement Agency	*Terminato*	Town of Chapel Hill PD	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Enforcement Agency	*Terminato*	Wake County EMS	Not Selected
Enforcement Agency	*Terminato*	Wake County Sheriff	Not Selected
Market Package: Emergency Response			
Emergency Management	*Subsystem*	City of Apex PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Apex PD	
Emergency Personnel	*Terminato*	City of Apex PD	
Emergency System Operator	*Terminato*	City of Apex PD	
Emergency Telecommunications System	*Terminato*	City of Apex PD	
Emergency System Operator	*Terminato*	City of Apex PD_Personnel	
Emergency Management	*Subsystem*	City of Durham PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Durham PD	
Emergency Personnel	*Terminato*	City of Durham PD	
Emergency System Operator	*Terminato*	City of Durham PD	
Emergency Telecommunications System	*Terminato*	City of Durham PD	
Emergency System Operator	*Terminato*	City of Durham PD_Personnel	
Emergency Management	*Subsystem*	City of Raleigh PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Raleigh PD	
Emergency Personnel	*Terminato*	City of Raleigh PD	
Emergency System Operator	*Terminato*	City of Raleigh PD	
Emergency Telecommunications System	*Terminato*	City of Raleigh PD	
Emergency System Operator	*Terminato*	City of Raleigh PD_Personnel	
Emergency Management	*Subsystem*	Department of Motor Vehicles	
Emergency System Operator	*Terminato*	Department of Motor Vehicles_Personnel	
Emergency Management	*Subsystem*	Durham County EMS	
Emergency Vehicle Subsystem	*Subsystem*	Durham County EMS	
Emergency Personnel	*Terminato*	Durham County EMS	

Entity Name	Type	Element Name	
Market Package: Emergency Response			
Emergency System Operator	*Terminato*	Durham County EMS	
Emergency Telecommunications System	*Terminato*	Durham County EMS	
Emergency System Operator	*Terminato*	Durham County EMS_Personnel	
Emergency Management	*Subsystem*	Durham County Sheriff	
Emergency Personnel	*Terminato*	Durham County Sheriff	
Emergency System Operator	*Terminato*	Durham County Sheriff_Personnel	
Emergency Vehicle Subsystem	*Subsystem*	Emergency Vehicles	
Emergency Management	*Subsystem*	Orange County Sheriff	
Emergency Personnel	*Terminato*	Orange County Sheriff	
Emergency System Operator	*Terminato*	Orange County Sheriff_Personnel	
Emergency Management	*Subsystem*	State Highway Patrol	
Emergency Vehicle Subsystem	*Subsystem*	State Highway Patrol	
Emergency Personnel	*Terminato*	State Highway Patrol	
Emergency Telecommunications System	*Terminato*	State Highway Patrol	
Emergency System Operator	*Terminato*	State Highway Patrol_Personnel	
Emergency Management	*Subsystem*	Town of Cary PD	
Emergency Vehicle Subsystem	*Subsystem*	Town of Cary PD	
Emergency Personnel	*Terminato*	Town of Cary PD	
Emergency System Operator	*Terminato*	Town of Cary PD	
Emergency Telecommunications System	*Terminato*	Town of Cary PD	
Emergency System Operator	*Terminato*	Town of Cary PD_Personnel	
Emergency Management	*Subsystem*	Town of Chapel Hill PD	
Emergency Vehicle Subsystem	*Subsystem*	Town of Chapel Hill PD	
Emergency Personnel	*Terminato*	Town of Chapel Hill PD	
Emergency System Operator	*Terminato*	Town of Chapel Hill PD	
Emergency Telecommunications System	*Terminato*	Town of Chapel Hill PD	
Emergency System Operator	*Terminato*	Town of Chapel Hill PD_Personnel	
Emergency Management	*Subsystem*	Wake County EMS	
Emergency Vehicle Subsystem	*Subsystem*	Wake County EMS	
Emergency Personnel	*Terminato*	Wake County EMS	
Emergency System Operator	*Terminato*	Wake County EMS	
Emergency Telecommunications System	*Terminato*	Wake County EMS	
Emergency System Operator	*Terminato*	Wake County EMS_Personnel	
Emergency Management	*Subsystem*	Wake County Sheriff	
Emergency Personnel	*Terminato*	Wake County Sheriff	
Emergency System Operator	*Terminato*	Wake County Sheriff_Personnel	
Map Update Provider	*Terminato*		Not in Inventory
Weather Service	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not Selected
Transit Management	*Subsystem*	Chapel Hill Transit	Not Selected
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	City of Raleigh	Not Selected

Entity Name	Type	Element Name	
Market Package: Emergency Response			
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Management	*Subsystem*	Durham Area Transit Authority	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Media	*Terminato*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Media	*Terminato*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Statewide	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Orange County EMS	Not Selected
Emergency Personnel	*Terminato*	Orange County EMS	Not Selected
Emergency System Operator	*Terminato*	Orange County EMS	Not Selected
Emergency Telecommunications System	*Terminato*	Orange County EMS	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Transit Management	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Market Package: Emergency Routing			
Traffic Management	*Subsystem*	City of Apex	
Emergency Management	*Subsystem*	City of Apex PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Apex PD	
Emergency Personnel	*Terminato*	City of Apex PD	
Emergency System Operator	*Terminato*	City of Apex PD	
Emergency System Operator	*Terminato*	City of Apex PD_Personnel	
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	
Emergency Management	*Subsystem*	City of Durham PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Durham PD	
Emergency Personnel	*Terminato*	City of Durham PD	
Emergency System Operator	*Terminato*	City of Durham PD	
Emergency System Operator	*Terminato*	City of Durham PD_Personnel	

Entity Name	Type	Element Name
		Market Package: Emergency Routing
Emergency Management	*Subsystem*	City of Raleigh
Traffic Management	*Subsystem*	City of Raleigh
Emergency Management	*Subsystem*	City of Raleigh PD
Emergency Vehicle Subsystem	*Subsystem*	City of Raleigh PD
Emergency Personnel	*Terminato*	City of Raleigh PD
Emergency System Operator	*Terminato*	City of Raleigh PD
Emergency System Operator	*Terminato*	City of Raleigh PD_Personnel
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment
Emergency Management	*Subsystem*	Durham County EMS
Emergency Vehicle Subsystem	*Subsystem*	Durham County EMS
Emergency Personnel	*Terminato*	Durham County EMS
Emergency System Operator	*Terminato*	Durham County EMS
Emergency System Operator	*Terminato*	Durham County EMS_Personnel
Emergency Management	*Subsystem*	Durham County Sheriff
Emergency Personnel	*Terminato*	Durham County Sheriff
Emergency System Operator	*Terminato*	Durham County Sheriff_Personnel
Emergency Vehicle Subsystem	*Subsystem*	Emergency Vehicles
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment
Emergency Management	*Subsystem*	Orange County Sheriff
Emergency Personnel	*Terminato*	Orange County Sheriff
Emergency System Operator	*Terminato*	Orange County Sheriff_Personnel
Emergency Management	*Subsystem*	State Highway Patrol
Emergency Vehicle Subsystem	*Subsystem*	State Highway Patrol
Emergency Personnel	*Terminato*	State Highway Patrol
Emergency System Operator	*Terminato*	State Highway Patrol_Personnel
Traffic Management	*Subsystem*	Town of Cary
Emergency Management	*Subsystem*	Town of Cary PD
Emergency Vehicle Subsystem	*Subsystem*	Town of Cary PD
Emergency Personnel	*Terminato*	Town of Cary PD
Emergency System Operator	*Terminato*	Town of Cary PD
Emergency System Operator	*Terminato*	Town of Cary PD_Personnel
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment
Traffic Management	*Subsystem*	Town of Chapel Hill
Emergency Management	*Subsystem*	Town of Chapel Hill PD
Emergency Vehicle Subsystem	*Subsystem*	Town of Chapel Hill PD
Emergency Personnel	*Terminato*	Town of Chapel Hill PD
Emergency System Operator	*Terminato*	Town of Chapel Hill PD
Emergency System Operator	*Terminato*	Town of Chapel Hill PD_Personnel
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment
Emergency Management	*Subsystem*	Wake County EMS
Emergency Vehicle Subsystem	*Subsystem*	Wake County EMS
Emergency Personnel	*Terminato*	Wake County EMS
Emergency System Operator	*Terminato*	Wake County EMS
Emergency System Operator	*Terminato*	Wake County EMS_Personnel
Emergency Management	*Subsystem*	Wake County Sheriff
Emergency Personnel	*Terminato*	Wake County Sheriff
Emergency System Operator	*Terminato*	Wake County Sheriff_Personnel

Entity Name	Type	Element Name	
Market Package: Emergency Routing			
Vehicle	*Subsystem*		Not in Inventory
Map Update Provider	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	Department of Motor Vehicles	Not Selected
Emergency System Operator	*Terminato*	Department of Motor Vehicles_Personnel	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Orange County EMS	Not Selected
Emergency Personnel	*Terminato*	Orange County EMS	Not Selected
Emergency System Operator	*Terminato*	Orange County EMS	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Market Package: Freeway Control			
Traffic Management	*Subsystem*	NCDOT Triangle Region	
Traffic Operations Personnel	*Terminato*	NCDOT Triangle Region_Personnel	
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	
Construction and Maintenance	*Terminato*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Traffic	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Operations Personnel	*Terminato*	City of Apex_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Traffic Operations Personnel	*Terminato*	City of Raleigh_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Cary_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Chapel Hill_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected

Entity Name	Type	Element Name	
Market Package: HAZMAT Management			
Emergency Management	*Subsystem*	City of Apex PD	
Emergency Management	*Subsystem*	City of Durham PD	
Emergency Management	*Subsystem*	City of Raleigh PD	
Commercial Vehicle Administration	*Subsystem*	Department of Motor Vehicles	
Emergency Management	*Subsystem*	Department of Motor Vehicles	
Emergency Management	*Subsystem*	Durham County EMS	
Emergency Management	*Subsystem*	Durham County Sheriff	
Emergency Management	*Subsystem*	Orange County Sheriff	
Emergency Management	*Subsystem*	State Highway Patrol	
Emergency Management	*Subsystem*	Town of Cary PD	
Emergency Management	*Subsystem*	Town of Chapel Hill PD	
Emergency Management	*Subsystem*	Wake County EMS	
Emergency Management	*Subsystem*	Wake County Sheriff	
Fleet and Freight Management	*Subsystem*		Not in Inventory
Vehicle	*Subsystem*		Not in Inventory
Basic Vehicle	*Terminato*		Not in Inventory
Commercial Vehicle	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Commercial Vehicle Subsystem	*Subsystem*	Commercial Vehicles	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Market Package: In Vehicle Signing			
Traffic Management	*Subsystem*	City of Raleigh	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Cary	
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Chapel Hill	
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	
Vehicle	*Subsystem*		Not in Inventory
Driver	*Terminato*		Not in Inventory

Entity Name	Type	Element Name	
Market Package: In Vehicle Signing			
Traffic Management	*Subsystem*	City of Apex	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Market Package: Incident Management System			
Emergency Management	*Subsystem*	City of Apex PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Apex PD	
Emergency System Operator	*Terminato*	City of Apex PD	
Emergency System Operator	*Terminato*	City of Apex PD_Personnel	
Emergency Management	*Subsystem*	City of Durham PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Durham PD	
Emergency System Operator	*Terminato*	City of Durham PD	
Emergency System Operator	*Terminato*	City of Durham PD_Personnel	
Emergency Management	*Subsystem*	City of Raleigh	
Information Service Provider	*Subsystem*	City of Raleigh	
Traffic Management	*Subsystem*	City of Raleigh	
Emergency Management	*Subsystem*	City of Raleigh PD	
Emergency Vehicle Subsystem	*Subsystem*	City of Raleigh PD	
Emergency System Operator	*Terminato*	City of Raleigh PD	
Emergency System Operator	*Terminato*	City of Raleigh PD_Personnel	
Traffic Operations Personnel	*Terminato*	City of Raleigh_Personnel	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Emergency Management	*Subsystem*	Department of Motor Vehicles	
Emergency System Operator	*Terminato*	Department of Motor Vehicles_Personnel	
Emergency Management	*Subsystem*	Durham County EMS	
Emergency Vehicle Subsystem	*Subsystem*	Durham County EMS	
Emergency System Operator	*Terminato*	Durham County EMS	
Emergency System Operator	*Terminato*	Durham County EMS_Personnel	
Emergency Management	*Subsystem*	Durham County Sheriff	
Emergency System Operator	*Terminato*	Durham County Sheriff_Personnel	
Emergency Vehicle Subsystem	*Subsystem*	Emergency Vehicles	
Information Service Provider	*Subsystem*	NCDOT Triangle Region	
Traffic Management	*Subsystem*	NCDOT Triangle Region	
Traffic Operations Personnel	*Terminato*	NCDOT Triangle Region_Personnel	
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	
Emergency Management	*Subsystem*	Orange County Sheriff	
Emergency System Operator	*Terminato*	Orange County Sheriff_Personnel	
Emergency Management	*Subsystem*	State Highway Patrol	
Emergency Vehicle Subsystem	*Subsystem*	State Highway Patrol	

Entity Name	Type	Element Name	
Market Package: Incident Management System			
Emergency System Operator	*Terminato*	State Highway Patrol_Personnel	
Emergency Management	*Subsystem*	Town of Chapel Hill PD	
Emergency Vehicle Subsystem	*Subsystem*	Town of Chapel Hill PD	
Emergency System Operator	*Terminato*	Town of Chapel Hill PD	
Emergency System Operator	*Terminato*	Town of Chapel Hill PD_Personnel	
Information Service Provider	*Subsystem*	Wake County	
Emergency Management	*Subsystem*	Wake County EMS	
Emergency Vehicle Subsystem	*Subsystem*	Wake County EMS	
Emergency System Operator	*Terminato*	Wake County EMS	
Emergency System Operator	*Terminato*	Wake County EMS_Personnel	
Emergency Management	*Subsystem*	Wake County Sheriff	
Emergency System Operator	*Terminato*	Wake County Sheriff_Personnel	
Construction and Maintenance	*Terminato*		Not in Inventory
Event Promoters	*Terminato*		Not in Inventory
Map Update Provider	*Terminato*		Not in Inventory
Traffic	*Terminato*		Not in Inventory
Weather Service	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Operations Personnel	*Terminato*	City of Apex_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Media	*Terminato*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Media	*Terminato*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Media	*Terminato*	NCDOT Statewide	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Orange County EMS	Not Selected
Emergency System Operator	*Terminato*	Orange County EMS	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Emergency Management	*Subsystem*	Town of Cary PD	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Town of Cary PD	Not Selected
Emergency System Operator	*Terminato*	Town of Cary PD	Not Selected
Emergency System Operator	*Terminato*	Town of Cary PD_Personnel	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Cary_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	Not Selected

Entity Name	Type	Element Name	
Market Package: Incident Management System			
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Chapel Hill_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Emergency Vehicle Subsystem	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Market Package: Interactive Traveler Information			
Information Service Provider	*Subsystem*	NCDOT Statewide	
Media	*Terminato*	NCDOT Statewide	
Traveler	*Terminato*	NCDOT Statewide	
Remote Traveler Support	*Subsystem*	NCDOT Statewide_Kiosks	
ISP Operator	*Terminato*	NCDOT Statewide_Personnel	
Personal Information Access	*Subsystem*	User Personal Computing Devices	
Emissions Management	*Subsystem*		Not in Inventory
Parking Management	*Subsystem*		Not in Inventory
Vehicle	*Subsystem*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Financial Institution	*Terminato*		Not in Inventory
Map Update Provider	*Terminato*		Not in Inventory
Multimodal Transportation Service Provider	*Terminato*		Not in Inventory
Payment Instrument	*Terminato*		Not in Inventory
Weather Service	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System	Not Selected
Remote Traveler Support	*Subsystem*	Capital Area Transit_Kiosks	Not Selected
Transit Management	*Subsystem*	Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit	Not Selected
Remote Traveler Support	*Subsystem*	Chapel Hill Transit_Kiosks	Not Selected
Traffic Management	*Subsystem*	City of Apex	Not Selected
Emergency Management	*Subsystem*	City of Apex PD	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	City of Durham PD	Not Selected
Emergency Management	*Subsystem*	City of Raleigh	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Emergency Management	*Subsystem*	City of Raleigh PD	Not Selected
ISP Operator	*Terminato*	City of Raleigh_Personnel	Not Selected
Emergency Management	*Subsystem*	Department of Motor Vehicles	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Transit Management	*Subsystem*	Durham Area Transit Authority	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority	Not Selected

Entity Name	Type	Element Name	
Market Package: Interactive Traveler Information			
Remote Traveler Support	*Subsystem*	Durham Area Transit_Kiosks	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	Durham County EMS	Not Selected
Emergency Management	*Subsystem*	Durham County Sheriff	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Media	*Terminato*	NCDOT Division 4	Not Selected
Traveler	*Terminato*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Media	*Terminato*	NCDOT Division 5	Not Selected
Traveler	*Terminato*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Division 7	Not Selected
Traveler	*Terminato*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
ISP Operator	*Terminato*	NCDOT Triangle Region	Not Selected
Remote Traveler Support	*Subsystem*	NCDOT Triangle Region_Kiosks	Not Selected
ISP Operator	*Terminato*	NCDOT Triangle Region_Personnel	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Emergency Management	*Subsystem*	Orange County Sheriff	Not Selected
Emergency Management	*Subsystem*	State Highway Patrol	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Emergency Management	*Subsystem*	Town of Cary PD	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Emergency Management	*Subsystem*	Town of Chapel Hill PD	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Management	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority	Not Selected
Remote Traveler Support	*Subsystem*	Triangle Transit Authority_Kiosks	Not Selected
ISP Operator	*Terminato*	Triangle Transit Authority_Personnel	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wake County	Not Selected

Entity Name	Type	Element Name	
Market Package: Interactive Traveler Information			
Emergency Management	*Subsystem*	Wake County EMS	Not Selected
Emergency Management	*Subsystem*	Wake County Sheriff	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wolfline	Not Selected
Market Package: ISP Based Route Guidance			
Information Service Provider	*Subsystem*	NCDOT Statewide	
Traveler	*Terminato*	NCDOT Statewide	
Remote Traveler Support	*Subsystem*	NCDOT Statewide_Kiosks	
ISP Operator	*Terminato*	NCDOT Statewide_Personnel	
Personal Information Access	*Subsystem*	User Personal Computing Devices	
Vehicle	*Subsystem*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Location Data Source	*Terminato*		Not in Inventory
Map Update Provider	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not Selected
Remote Traveler Support	*Subsystem*	Capital Area Transit_Kiosks	Not Selected
Transit Management	*Subsystem*	Chapel Hill Transit	Not Selected
Remote Traveler Support	*Subsystem*	Chapel Hill Transit_Kiosks	Not Selected
Traffic Management	*Subsystem*	City of Apex	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
ISP Operator	*Terminato*	City of Raleigh_Personnel	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Management	*Subsystem*	Durham Area Transit Authority	Not Selected
Remote Traveler Support	*Subsystem*	Durham Area Transit_Kiosks	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traveler	*Terminato*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traveler	*Terminato*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traveler	*Terminato*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
ISP Operator	*Terminato*	NCDOT Triangle Region	Not Selected
Remote Traveler Support	*Subsystem*	NCDOT Triangle Region_Kiosks	Not Selected
ISP Operator	*Terminato*	NCDOT Triangle Region_Personnel	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected

Entity Name	Type	Element Name	
Market Package: ISP Based Route Guidance			
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Management	*Subsystem*	Triangle Transit Authority	Not Selected
Remote Traveler Support	*Subsystem*	Triangle Transit Authority_Kiosks	Not Selected
ISP Operator	*Terminato*	Triangle Transit Authority_Personnel	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Market Package: Multi-modal Coordination			
Transit Management	*Subsystem*	Capital Area Transit System	
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System	
Transit Management	*Subsystem*	Chapel Hill Transit	
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit	
Traffic Management	*Subsystem*	City of Raleigh	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Transit Management	*Subsystem*	Durham Area Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority	
Transit Management	*Subsystem*	Triangle Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority	
Parking Management	*Subsystem*		Not in Inventory
Multimodal Transportation Service Provider	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham County	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected

Entity Name	Type	Element Name	
Market Package: Multi-modal Coordination			
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wolfline	Not Selected
Market Package: Network Surveillance			
Information Service Provider	*Subsystem*	City of Raleigh	
Traffic Management	*Subsystem*	City of Raleigh	
Traffic Operations Personnel	*Terminato*	City of Raleigh_Personnel	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Information Service Provider	*Subsystem*	NCDOT Triangle Region	
Traffic Management	*Subsystem*	NCDOT Triangle Region	
Traffic Operations Personnel	*Terminato*	NCDOT Triangle Region_Personnel	
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	
Information Service Provider	*Subsystem*	Wake County	
Construction and Maintenance	*Terminato*		Not in Inventory
Map Update Provider	*Terminato*		Not in Inventory
Traffic	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Operations Personnel	*Terminato*	City of Apex_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Cary_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Chapel Hill_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Market Package: Probe Surveillance			
Information Service Provider	*Subsystem*	City of Raleigh	
Traffic Management	*Subsystem*	City of Raleigh	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	

Entity Name	Type	Element Name	
Market Package: Probe Surveillance			
Information Service Provider	*Subsystem*	Wake County	
Toll Administration	*Subsystem*		Not in Inventory
Vehicle	*Subsystem*		Not in Inventory
Location Data Source	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Market Package: Regional Traffic Control			
Traffic Management	*Subsystem*	City of Raleigh	
Traffic Operations Personnel	*Terminato*	City of Raleigh_Personnel	
Traffic Management	*Subsystem*	NCDOT Triangle Region	
Traffic Operations Personnel	*Terminato*	NCDOT Triangle Region_Personnel	
Traffic Management	*Subsystem*	Town of Chapel Hill	
Traffic Operations Personnel	*Terminato*	Town of Chapel Hill_Personnel	
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Operations Personnel	*Terminato*	City of Apex_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Operations Personnel	*Terminato*	Town of Cary_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	Not Selected

Entity Name	Type	Element Name	
Market Package: Regional Traffic Control			
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Market Package: Roadside CVO Safety			
Commercial Vehicle Check	*Subsystem*	Department of Motor Vehicles_Inspection Facility	
Commercial Vehicle	*Terminato*		Not in Inventory
Commercial Vehicle Driver	*Terminato*		Not in Inventory
Commercial Vehicle Subsystem	*Subsystem*	Commercial Vehicles	Not Selected
CVO Inspector	*Terminato*	CVO Inspector	Not Selected
Commercial Vehicle Administration	*Subsystem*	Department of Motor Vehicles	Not Selected
Market Package: Standard Railroad Grade Crossing			
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	
Traffic Management	*Subsystem*	City of Raleigh	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Cary	
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	
Driver	*Terminato*		Not in Inventory
Pedestrians	*Terminato*		Not in Inventory
Traffic	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Multimodal Crossings	*Terminato*	City of Durham	Not Selected
Rail Operations	*Terminato*	City of Durham	Not Selected
Multimodal Crossings	*Terminato*	City of Raleigh PD	Not Selected
Rail Operations	*Terminato*	City of Raleigh PD	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Wayside Equipment	*Terminato*	NCDOT Triangle Region	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Market Package: Surface Street Control			
Traffic Management	*Subsystem*	City of Apex	
Traffic Operations Personnel	*Terminato*	City of Apex_Personnel	
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	
Emergency Management	*Subsystem*	City of Raleigh	
Traffic Management	*Subsystem*	City of Raleigh	

Entity Name	Type	Element Name	
Market Package: Surface Street Control			
Traffic Operations Personnel	*Terminato*	City of Raleigh_Personnel	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Cary	
Traffic Operations Personnel	*Terminato*	Town of Cary_Personnel	
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Chapel Hill	
Traffic Operations Personnel	*Terminato*	Town of Chapel Hill_Personnel	
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	
Emergency Management	*Subsystem*	Town of Garner	
Traffic Management	*Subsystem*	Town of Garner	
Construction and Maintenance	*Terminato*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Pedestrians	*Terminato*		Not in Inventory
Traffic	*Terminato*		Not in Inventory
Emergency Management	*Subsystem*	City of Apex PD	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	City of Durham PD	Not Selected
Emergency Management	*Subsystem*	City of Raleigh PD	Not Selected
Emergency Management	*Subsystem*	Department of Motor Vehicles	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	Durham County EMS	Not Selected
Emergency Management	*Subsystem*	Durham County Sheriff	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Operations Personnel	*Terminato*	NCDOT Triangle Region_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected
Emergency Management	*Subsystem*	Orange County Sheriff	Not Selected
Emergency Management	*Subsystem*	State Highway Patrol	Not Selected
Emergency Management	*Subsystem*	Town of Cary PD	Not Selected
Emergency Management	*Subsystem*	Town of Chapel Hill PD	Not Selected
Emergency Management	*Subsystem*	Wake County EMS	Not Selected
Emergency Management	*Subsystem*	Wake County Sheriff	Not Selected
Market Package: Traffic Information Dissemination			
Emergency Management	*Subsystem*	City of Raleigh	
Information Service Provider	*Subsystem*	City of Raleigh	
Traffic Management	*Subsystem*	City of Raleigh	
Traffic Operations Personnel	*Terminato*	City of Raleigh_Personnel	
Roadway Subsystem	*Subsystem*	City of Raleigh_Roadside Equipment	
Information Service Provider	*Subsystem*	NCDOT Triangle Region	

Market Package: Traffic Information Dissemination

Entity Name	Type	Element Name	
Traffic Management	*Subsystem*	NCDOT Triangle Region	
Traffic Operations Personnel	*Terminato*	NCDOT Triangle Region_Personnel	
Roadway Subsystem	*Subsystem*	NCDOT Triangle Region_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Cary	
Traffic Operations Personnel	*Terminato*	Town of Cary_Personnel	
Roadway Subsystem	*Subsystem*	Town of Cary_Roadside Equipment	
Traffic Management	*Subsystem*	Town of Chapel Hill	
Traffic Operations Personnel	*Terminato*	Town of Chapel Hill_Personnel	
Roadway Subsystem	*Subsystem*	Town of Chapel Hill_Roadside Equipment	
Information Service Provider	*Subsystem*	Wake County	
Transit Management	*Subsystem*	Wake County	
Basic Vehicle	*Terminato*		Not in Inventory
Driver	*Terminato*		Not in Inventory
Pedestrians	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not Selected
Transit Management	*Subsystem*	Chapel Hill Transit	Not Selected
Traffic Management	*Subsystem*	City of Apex	Not Selected
Emergency Management	*Subsystem*	City of Apex PD	Not Selected
Traffic Operations Personnel	*Terminato*	City of Apex_Personnel	Not Selected
Roadway Subsystem	*Subsystem*	City of Apex_Roadside Equipment	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Emergency Management	*Subsystem*	City of Durham PD	Not Selected
Emergency Management	*Subsystem*	City of Raleigh PD	Not Selected
Emergency Management	*Subsystem*	Department of Motor Vehicles	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Management	*Subsystem*	Durham Area Transit Authority	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Emergency Management	*Subsystem*	Durham County EMS	Not Selected
Emergency Management	*Subsystem*	Durham County Sheriff	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Media	*Terminato*	NCDOT Division 4	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Media	*Terminato*	NCDOT Division 5	Not Selected
Emergency Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Media	*Terminato*	NCDOT Statewide	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Emergency Management	*Subsystem*	Orange County EMS	Not Selected

Entity Name	Type	Element Name	
Market Package: Traffic Information Dissemination			
Emergency Management	*Subsystem*	Orange County Sheriff	Not Selected
Emergency Management	*Subsystem*	State Highway Patrol	Not Selected
Emergency Management	*Subsystem*	Town of Cary PD	Not Selected
Emergency Management	*Subsystem*	Town of Chapel Hill PD	Not Selected
Emergency Management	*Subsystem*	Town of Garner	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Information Service Provider	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Management	*Subsystem*	Triangle Transit Authority	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Emergency Management	*Subsystem*	Wake County EMS	Not Selected
Emergency Management	*Subsystem*	Wake County Sheriff	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Market Package: Transit Fixed-Route Operations			
Transit Management	*Subsystem*	Capital Area Transit System	
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System	
Transit Fleet Manager	*Terminato*	Capital Area Transit_Personnel	
Transit System Operators	*Terminato*	Capital Area Transit_Personnel	
Transit Management	*Subsystem*	Chapel Hill Transit	
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit	
Transit Fleet Manager	*Terminato*	Chapel Hill Transit_Personnel	
Transit System Operators	*Terminato*	Chapel Hill Transit_Personnel	
Transit Management	*Subsystem*	Durham Area Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority	
Transit Fleet Manager	*Terminato*	Durham Area Transit_Personnel	
Transit System Operators	*Terminato*	Durham Area Transit_Personnel	
Information Service Provider	*Subsystem*	Triangle Transit Authority	
Transit Management	*Subsystem*	Triangle Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority	
Transit Fleet Manager	*Terminato*	Triangle Transit Authority_Personnel	
Transit System Operators	*Terminato*	Triangle Transit Authority_Personnel	
Transit Management	*Subsystem*	Wolfline	
Transit Vehicle Subsystem	*Subsystem*	Wolfline	
Transit Fleet Manager	*Terminato*	Wolfline_Personnel	
Transit System Operators	*Terminato*	Wolfline_Personnel	
Transit Driver	*Terminato*		Not in Inventory
Weather Service	*Terminato*		Not in Inventory
Traffic Management	*Subsystem*	City of Apex	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Traffic Management	*Subsystem*	City of Durham	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected

Entity Name	Type	Element Name	
Market Package: Transit Fixed-Route Operations			
Transit Vehicle Subsystem	*Subsystem*	Durham County	
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wake County	Not Selected
			Not Selected
Market Package: Transit Passenger and Fare Management			
Transit Management	*Subsystem*	Capital Area Transit System	
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System	
Remote Traveler Support	*Subsystem*	Capital Area Transit_Kiosks	
Transit Management	*Subsystem*	Chapel Hill Transit	
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit	
Remote Traveler Support	*Subsystem*	Chapel Hill Transit_Kiosks	
Transit Management	*Subsystem*	Durham Area Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority	
Remote Traveler Support	*Subsystem*	Durham Area Transit_Kiosks	
Information Service Provider	*Subsystem*	Triangle Transit Authority	
Transit Management	*Subsystem*	Triangle Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority	
Remote Traveler Support	*Subsystem*	Triangle Transit Authority_Kiosks	
Transit Management	*Subsystem*	Wolfline	
Transit Vehicle Subsystem	*Subsystem*	Wolfline	
Financial Institution	*Terminato*		
Payment Instrument	*Terminato*		Not in Inventory
Transit User	*Terminato*		Not in Inventory
Transit System Operators	*Terminato*	Capital Area Transit_Personnel	Not in Inventory
Transit System Operators	*Terminato*	Chapel Hill Transit_Personnel	Not Selected
Enforcement Agency	*Terminato*	City of Apex PD	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Enforcement Agency	*Terminato*	City of Durham PD	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
			Not Selected

Entity Name	Type	Element Name	
Market Package: Transit Passenger and Fare Management			
Enforcement Agency	*Terminato*	City of Raleigh PD	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Transit System Operators	*Terminato*	Durham Area Transit_Personnel	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham County	Not Selected
Enforcement Agency	*Terminato*	Durham County EMS	Not Selected
Enforcement Agency	*Terminato*	Durham County Sheriff	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Remote Traveler Support	*Subsystem*	NCDOT Statewide_Kiosks	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Remote Traveler Support	*Subsystem*	NCDOT Triangle Region_Kiosks	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Enforcement Agency	*Terminato*	Orange County EMS	Not Selected
Enforcement Agency	*Terminato*	Orange County Sheriff	Not Selected
Enforcement Agency	*Terminato*	State Highway Patrol	Not Selected
Enforcement Agency	*Terminato*	Town of Cary PD	Not Selected
Enforcement Agency	*Terminato*	Town of Chapel Hill PD	Not Selected
Transit System Operators	*Terminato*	Triangle Transit Authority_Personnel	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wake County	Not Selected
Enforcement Agency	*Terminato*	Wake County EMS	Not Selected
Enforcement Agency	*Terminato*	Wake County Sheriff	Not Selected
Transit System Operators	*Terminato*	Wolfline_Personnel	Not Selected

Market Package: Transit Traveler Information		
Transit Management	*Subsystem*	Capital Area Transit System
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System
Remote Traveler Support	*Subsystem*	Capital Area Transit_Kiosks
Transit Management	*Subsystem*	Chapel Hill Transit
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit
Remote Traveler Support	*Subsystem*	Chapel Hill Transit_Kiosks
Transit Management	*Subsystem*	Durham Area Transit Authority
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority
Remote Traveler Support	*Subsystem*	Durham Area Transit_Kiosks
Information Service Provider	*Subsystem*	Triangle Transit Authority
Transit Management	*Subsystem*	Triangle Transit Authority
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority
Remote Traveler Support	*Subsystem*	Triangle Transit Authority_Kiosks

Entity Name	Type	Element Name	
Market Package: Transit Traveler Information			
Personal Information Access	*Subsystem*	User Personal Computing Devices	
Transit Management	*Subsystem*	Wolfline	
Transit Vehicle Subsystem	*Subsystem*	Wolfline	
Vehicle	*Subsystem*		
Transit User	*Terminato*		
Traffic Management	*Subsystem*	City of Apex	Not in Inventory
Information Service Provider	*Subsystem*	City of Durham	Not in Inventory
Traffic Management	*Subsystem*	City of Durham	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Traffic Management	*Subsystem*	City of Raleigh	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Traffic Management	*Subsystem*	Durham County	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham County	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 4	Not Selected
Media	*Terminato*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 5	Not Selected
Media	*Terminato*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Traffic Management	*Subsystem*	NCDOT Division 7	Not Selected
Media	*Terminato*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Media	*Terminato*	NCDOT Statewide	Not Selected
Remote Traveler Support	*Subsystem*	NCDOT Statewide_Kiosks	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Traffic Management	*Subsystem*	NCDOT Triangle Region	Not Selected
Remote Traveler Support	*Subsystem*	NCDOT Triangle Region_Kiosks	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Traffic Management	*Subsystem*	Town of Cary	Not Selected
Traffic Management	*Subsystem*	Town of Chapel Hill	Not Selected
Traffic Management	*Subsystem*	Town of Garner	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wake County	Not Selected
Market Package: Transit Vehicle Tracking			
Information Service Provider	*Subsystem*	Triangle Transit Authority	
Transit Management	*Subsystem*	Triangle Transit Authority	
Transit Vehicle Subsystem	*Subsystem*	Triangle Transit Authority	
Vehicle	*Subsystem*		

Market Package: Transit Vehicle Tracking

Entity Name	Type	Element Name	
Location Data Source	*Terminato*		
Map Update Provider	*Terminato*		Not in Inventory
Transit Vehicle	*Terminato*		Not in Inventory
Transit Management	*Subsystem*	Capital Area Transit System	Not in Inventory
Transit Vehicle Subsystem	*Subsystem*	Capital Area Transit System	Not Selected
Transit Management	*Subsystem*	Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	City of Durham	Not Selected
Information Service Provider	*Subsystem*	City of Raleigh	Not Selected
Transit Management	*Subsystem*	Duke University Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Duke University Transit	Not Selected
Transit Management	*Subsystem*	Durham Area Transit Authority	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham Area Transit Authority	Not Selected
Transit Management	*Subsystem*	Durham County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Durham County	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 4	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 5	Not Selected
Information Service Provider	*Subsystem*	NCDOT Division 7	Not Selected
Information Service Provider	*Subsystem*	NCDOT Statewide	Not Selected
Information Service Provider	*Subsystem*	NCDOT Triangle Region	Not Selected
Transit Management	*Subsystem*	Orange County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Orange County	Not Selected
Transit Management	*Subsystem*	University of Chapel Hill Transit	Not Selected
Transit Vehicle Subsystem	*Subsystem*	University of Chapel Hill Transit	Not Selected
Information Service Provider	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wake County	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wake County	Not Selected
Transit Management	*Subsystem*	Wolfline	Not Selected
Transit Vehicle Subsystem	*Subsystem*	Wolfline	Not Selected
			Not Selected

Market Packages Report

Market Packages for Region Triangle

Market Package	Element(s)	
Advanced Railroad Grade Crossing (ATMS14) -- Existing		
	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Roadside Equipment	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	
	Town of Cary_Roadside Equipment	
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Demand Response Transit Operations (APTS3) -- Existing		
	Capital Area Transit System	-- Not Selected
	Capital Area Transit_Personnel	-- Not Selected
	Chapel Hill Transit	
	Chapel Hill Transit_Personnel	
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	
	Durham Area Transit_Personnel	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected

Market Package	Element(s)	
	Wake County	
	Wolfline	-- Not Selected
	Wolfline_Personnel	-- Not Selected
Electronic Toll Collection (ATMS10) -- Existing		
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
Emergency Response (EM1) -- Existing		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex	-- Not Selected
	City of Apex PD	
	City of Apex PD_Personnel	
	City of Durham	-- Not Selected
	City of Durham PD	
	City of Durham PD_Personnel	
	City of Raleigh	-- Not Selected
	City of Raleigh PD	
	City of Raleigh PD_Personnel	
	Department of Motor Vehicles	
	Department of Motor Vehicles_Personnel	
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected

Market Package	Element(s)	
	Durham County	-- Not Selected
	Durham County EMS	
	Durham County EMS_Personnel	
	Durham County Sheriff	
	Durham County Sheriff_Personnel	
	Emergency Vehicles	
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	
	Orange County Sheriff_Personnel	
	State Highway Patrol	
	State Highway Patrol_Personnel	
	Town of Cary	-- Not Selected
	Town of Cary PD	
	Town of Cary PD_Personnel	
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	
	Town of Chapel Hill PD_Personnel	
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wake County EMS	
	Wake County EMS_Personnel	
	Wake County Sheriff	
	Wake County Sheriff_Personnel	
	Wolfline	-- Not Selected
Emergency Routing (EM2) -- Existing		
	City of Apex	
	City of Apex PD	
	City of Apex PD_Personnel	
	City of Apex_Roadside Equipment	
	City of Durham	-- Not Selected
	City of Durham PD	
	City of Durham PD_Personnel	
	City of Raleigh	
	City of Raleigh PD	
	City of Raleigh PD_Personnel	
	City of Raleigh_Roadside Equipment	
	Department of Motor Vehicles	-- Not Selected
	Department of Motor Vehicles_Personnel	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	

Market Packages for Region Triangle

Market Package	Element(s)	
	Durham County EMS_Personnel	
	Durham County Sheriff	
	Durham County Sheriff_Personnel	
	Emergency Vehicles	
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	
	Orange County EMS	-- Not Selected
	Orange County Sheriff	
	Orange County Sheriff_Personnel	
	State Highway Patrol	
	State Highway Patrol_Personnel	
	Town of Cary	
	Town of Cary PD	
	Town of Cary PD_Personnel	
	Town of Cary_Roadside Equipment	
	Town of Chapel Hill	
	Town of Chapel Hill PD	
	Town of Chapel Hill PD_Personnel	
	Town of Chapel Hill_Roadside Equipment	
	Town of Garner	-- Not Selected
	Wake County EMS	
	Wake County EMS_Personnel	
	Wake County Sheriff	
	Wake County Sheriff_Personnel	
Freeway Control (ATMS04) -- Existing		
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	
	NCDOT Triangle Region_Personnel	
	NCDOT Triangle Region_Roadside Equipment	
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected

Market Package	Element(s)	
	Town of Garner	-- Not Selected
HAZMAT Management (CVO10) -- Existing		
	City of Apex	-- Not Selected
	City of Apex PD	
	City of Durham	-- Not Selected
	City of Durham PD	
	City of Raleigh	-- Not Selected
	City of Raleigh PD	
	Commercial Vehicles	-- Not Selected
	Department of Motor Vehicles	
	Durham County	-- Not Selected
	Durham County EMS	
	Durham County Sheriff	
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	
	State Highway Patrol	
	Town of Cary	-- Not Selected
	Town of Cary PD	
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	
	Town of Garner	-- Not Selected
	Wake County EMS	
	Wake County Sheriff	
Multi-modal Coordination (APTS7) -- Existing		
	Capital Area Transit System	
	Chapel Hill Transit	
	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh_Roadside Equipment	
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected

Market Package	Element(s)	
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected
Network Surveillance (ATMS01) -- Existing		
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh_Personnel	
	City of Raleigh_Roadside Equipment	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	
	NCDOT Triangle Region_Personnel	
	NCDOT Triangle Region_Roadside Equipment	
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Wake County	
Regional Traffic Control (ATMS07) -- Existing		
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh_Personnel	
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	
	NCDOT Triangle Region_Personnel	

Market Packages for Region Triangle

Market Package	Element(s)	
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	
	Town of Chapel Hill_Personnel	
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Roadside CVO Safety (CVO07) -- Existing		
	Commercial Vehicles	-- Not Selected
	CVO Inspector	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Department of Motor Vehicles_Inspection Facility	
Standard Railroad Grade Crossing (ATMS13) -- Existing		
	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Roadside Equipment	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	
	Town of Cary_Roadside Equipment	
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Surface Street Control (ATMS03) -- Existing		
	City of Apex	
	City of Apex PD	-- Not Selected
	City of Apex_Personnel	
	City of Apex_Roadside Equipment	
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Personnel	
	City of Raleigh_Roadside Equipment	
	Department of Motor Vehicles	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	
	Town of Cary PD	-- Not Selected
	Town of Cary_Personnel	
	Town of Cary_Roadside Equipment	
	Town of Chapel Hill	
	Town of Chapel Hill PD	-- Not Selected
	Town of Chapel Hill_Personnel	
	Town of Chapel Hill_Roadside Equipment	
	Town of Garner	
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
Traffic Information Dissemination (ATMS06) -- Existing		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Personnel	
	City of Raleigh_Roadside Equipment	
	Department of Motor Vehicles	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	
	NCDOT Triangle Region_Personnel	
	NCDOT Triangle Region_Roadside Equipment	
	Orange County	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	
	Town of Cary PD	-- Not Selected
	Town of Cary_Personnel	
	Town of Cary_Roadside Equipment	
	Town of Chapel Hill	
	Town of Chapel Hill PD	-- Not Selected
	Town of Chapel Hill_Personnel	
	Town of Chapel Hill_Roadside Equipment	
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	-- Not Selected
Transit Passenger and Fare Management (APTS4) -- Existing		
	Capital Area Transit System	
	Capital Area Transit_Kiosks	
	Capital Area Transit_Personnel	-- Not Selected
	Chapel Hill Transit	
	Chapel Hill Transit_Kiosks	
	Chapel Hill Transit_Personnel	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	
	Durham Area Transit_Kiosks	
	Durham Area Transit_Personnel	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Kiosks	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected

Market Package	Element(s)	
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Triangle Transit Authority	
	Triangle Transit Authority_Kiosks	
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	
	Wolfline_Personnel	-- Not Selected
Transit Traveler Information (APTS8) -- Existing		
	Capital Area Transit System	
	Capital Area Transit_Kiosks	
	Chapel Hill Transit	
	Chapel Hill Transit_Kiosks	
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	
	Durham Area Transit_Kiosks	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Kiosks	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	
	Triangle Transit Authority_Kiosks	
	University of Chapel Hill Transit	-- Not Selected
	User Personal Computing Devices	
	Wake County	-- Not Selected
	Wolfline	
Automated Highway System (AVSS11) -- Not Planned		
	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected

Market Package	Element(s)	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Autonomous Route Guidance (ATIS3) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh PD	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Emergency Vehicles	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	User Personal Computing Devices	-- Not Selected
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wolfline	-- Not Selected
CV Administrative Processes (CVO04) -- Not Planned		
	City of Apex PD	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh PD	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	Orange County EMS	-- Not Selected

Market Package	Element(s)	
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
CVO Fleet Maintenance (CVO09) -- Not Planned		
	Commercial Vehicles	-- Not Selected
Dynamic Ridesharing (ATIS8) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Capital Area Transit_Kiosks	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Kiosks	-- Not Selected
	NCDOT Statewide_Personnel	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	Orange County	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Kiosks	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	User Personal Computing Devices	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected
Dynamic Route Guidance (ATIS4) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	Duke University Transit	-- Not Selected

Market Package	Element(s)	
	Durham Area Transit Authority	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Personnel	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	User Personal Computing Devices	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected
Electronic Clearance (CVO03) -- Not Planned		
	Commercial Vehicles	-- Not Selected
	CVO Inspector	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Department of Motor Vehicles_Inspection Facility	-- Not Selected
Emissions Monitoring and Management (ATMS11) -- Not Planned		
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Wake County	-- Not Selected
Fleet Administration (CVO01) -- Not Planned		
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	Commercial Vehicles	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Wake County	-- Not Selected
Freight Administration (CVO02) -- Not Planned		
	Commercial Vehicles	-- Not Selected
HOV Lane Management (ATMS05) -- Not Planned		
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected

Market Package	Element(s)	
Integrated Transportation Management/Route Guidance (ATIS6) -- Not Planned		
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Personnel	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	User Personal Computing Devices	-- Not Selected
	Wake County	-- Not Selected
International Border Electronic Clearance (CVO05) -- Not Planned		
	Commercial Vehicles	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Department of Motor Vehicles_Inspection Facility	-- Not Selected
Intersection Collision Avoidance (AVSS10) -- Not Planned		
	City of Apex_Roadside Equipment	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
Intersection Safety Warning (AVSS05) -- Not Planned		
	City of Apex_Roadside Equipment	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
ITS Data Mart (AD1) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected

Market Package	Element(s)	
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	-- Not Selected
ITS Data Warehouse (AD2) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	-- Not Selected
ITS Virtual Data Warehouse (AD3) -- Not Planned		
	NCDOT Statewide	-- Not Selected
	Town of Garner	-- Not Selected
Mayday Support (EM3) -- Not Planned		
	Capital Area Transit_Kiosks	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Apex PD_Personnel	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Durham PD_Personnel	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	City of Raleigh PD_Personnel	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Department of Motor Vehicles_Personnel	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County EMS_Personnel	-- Not Selected
	Durham County Sheriff	-- Not Selected
	Durham County Sheriff_Personnel	-- Not Selected

Market Package	Element(s)	
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Kiosks	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	Orange County Sheriff_Personnel	-- Not Selected
	State Highway Patrol	-- Not Selected
	State Highway Patrol_Personnel	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Cary PD_Personnel	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Chapel Hill PD_Personnel	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority_Kiosks	-- Not Selected
	User Personal Computing Devices	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County EMS_Personnel	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wake County Sheriff_Personnel	-- Not Selected
On-board CVO Safety (CVO08) -- Not Planned		
	Commercial Vehicles	-- Not Selected
	CVO Inspector	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Department of Motor Vehicles_Inspection Facility	-- Not Selected
Parking Facility Management (ATMS16) -- Not Planned		
	City of Apex PD	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Triangle Transit Authority	-- Not Selected

Market Package	Element(s)	
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected

Railroad Operations Coordination (ATMS15) -- Not Planned

	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Wake County	-- Not Selected

Regional Parking Management (ATMS19) -- Not Planned

	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected

Reversible Lane Management (ATMS17) -- Not Planned

Market Packages for Region Triangle

Market Package	Element(s)	
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Road Weather Information System (ATMS18) -- Not Planned		
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Traffic Forecast and Demand Management (ATMS09) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected

Market Package	Element(s)	
	City of Apex	-- Not Selected
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected
Transit Maintenance (APTS6) -- Not Planned		
	Capital Area Transit System	-- Not Selected
	Capital Area Transit_Personnel	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	Chapel Hill Transit_Personnel	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham Area Transit_Personnel	-- Not Selected
	Durham County	-- Not Selected
	Orange County	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected
	Wolfline_Personnel	-- Not Selected
Transit Security (APTS5) -- Not Planned		
	Capital Area Transit System	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	Capital Area Transit_Kiosks	-- Not Selected
	Capital Area Transit_Personnel	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	Chapel Hill Transit_Personnel	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	Durham Area Transit_Personnel	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Kiosks	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Kiosks	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	-- Not Selected
	Wolfline_Personnel	-- Not Selected

Virtual TMC and Smart Probe Data (ATMS12) -- Not Planned

	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Roadside Equipment	-- Not Selected
	Durham County	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
Weigh-In-Motion (CVO06) -- Not Planned		
	Commercial Vehicles	-- Not Selected
	Department of Motor Vehicles_Inspection Facility	-- Not Selected
Yellow Pages and Reservation (ATIS7) -- Not Planned		
	Capital Area Transit_Kiosks	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Statewide_Kiosks	-- Not Selected
	NCDOT Statewide_Personnel	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Kiosks	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	User Personal Computing Devices	-- Not Selected
	Wake County	-- Not Selected
Broadcast Traveler Information (ATIS1) -- Planned		
	Capital Area Transit System	-- Not Selected
	Capital Area Transit_Kiosks	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	
	City of Raleigh PD	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	City of Raleigh_Personnel	
	Department of Motor Vehicles	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	
	NCDOT Statewide_Kiosks	
	NCDOT Statewide_Personnel	
	NCDOT Triangle Region	
	NCDOT Triangle Region_Kiosks	
	NCDOT Triangle Region_Personnel	
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	
	Triangle Transit Authority_Kiosks	
	Triangle Transit Authority_Personnel	
	University of Chapel Hill Transit	-- Not Selected
	User Personal Computing Devices	
	Wake County	
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	-- Not Selected
In Vehicle Signing (ATIS9) -- Planned		
	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh_Roadside Equipment	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	

Market Package	Element(s)	
	Town of Cary_Roadside Equipment	
	Town of Chapel Hill	
	Town of Chapel Hill_Roadside Equipment	
	Town of Garner	-- Not Selected

Incident Management System (ATMS08) -- Planned

	City of Apex	-- Not Selected
	City of Apex PD	
	City of Apex PD_Personnel	
	City of Apex_Personnel	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	
	City of Durham PD_Personnel	
	City of Raleigh	
	City of Raleigh PD	
	City of Raleigh PD_Personnel	
	City of Raleigh_Personnel	
	City of Raleigh_Roadside Equipment	
	Department of Motor Vehicles	
	Department of Motor Vehicles_Personnel	
	Durham County	-- Not Selected
	Durham County EMS	
	Durham County EMS_Personnel	
	Durham County Sheriff	
	Durham County Sheriff_Personnel	
	Emergency Vehicles	
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	
	NCDOT Triangle Region_Personnel	
	NCDOT Triangle Region_Roadside Equipment	
	Orange County EMS	-- Not Selected
	Orange County Sheriff	
	Orange County Sheriff_Personnel	
	State Highway Patrol	
	State Highway Patrol_Personnel	
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Cary PD_Personnel	-- Not Selected
	Town of Cary_Personnel	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	
	Town of Chapel Hill PD_Personnel	
	Town of Chapel Hill_Personnel	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected

Market Package	Element(s)	
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Wake County	
	Wake County EMS	
	Wake County EMS_Personnel	
	Wake County Sheriff	
	Wake County Sheriff_Personnel	

Interactive Traveler Information (ATIS2) -- Planned

	Capital Area Transit System	-- Not Selected
	Capital Area Transit_Kiosks	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	City of Apex	-- Not Selected
	City of Apex PD	-- Not Selected
	City of Durham	-- Not Selected
	City of Durham PD	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh PD	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	Department of Motor Vehicles	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	Durham County	-- Not Selected
	Durham County EMS	-- Not Selected
	Durham County Sheriff	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	
	NCDOT Statewide_Kiosks	
	NCDOT Statewide_Personnel	
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	Orange County	-- Not Selected
	Orange County EMS	-- Not Selected
	Orange County Sheriff	-- Not Selected
	State Highway Patrol	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary PD	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill PD	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Kiosks	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	User Personal Computing Devices	
	Wake County	-- Not Selected
	Wake County EMS	-- Not Selected
	Wake County Sheriff	-- Not Selected
	Wolfline	-- Not Selected
ISP Based Route Guidance (ATIS5) -- Planned		
	Capital Area Transit System	-- Not Selected
	Capital Area Transit_Kiosks	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	Chapel Hill Transit_Kiosks	-- Not Selected
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	City of Raleigh_Personnel	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected
	Durham Area Transit_Kiosks	-- Not Selected
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	
	NCDOT Statewide_Kiosks	
	NCDOT Statewide_Personnel	
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Kiosks	-- Not Selected
	NCDOT Triangle Region_Personnel	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Triangle Transit Authority_Kiosks	-- Not Selected
	Triangle Transit Authority_Personnel	-- Not Selected
	University of Chapel Hill Transit	-- Not Selected
	User Personal Computing Devices	
	Wake County	-- Not Selected
	Wolfline	-- Not Selected
Probe Surveillance (ATMS02) -- Planned		
	City of Apex	-- Not Selected
	City of Apex_Roadside Equipment	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	
	City of Raleigh_Roadside Equipment	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected

Market Package	Element(s)	
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	NCDOT Triangle Region_Roadside Equipment	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Cary_Roadside Equipment	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Chapel Hill_Roadside Equipment	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	-- Not Selected
	Wake County	
Transit Fixed-Route Operations (APTS2) -- Planned		
	Capital Area Transit System	
	Capital Area Transit_Personnel	
	Chapel Hill Transit	
	Chapel Hill Transit_Personnel	
	City of Apex	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	
	Durham Area Transit_Personnel	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County	-- Not Selected
	Town of Cary	-- Not Selected
	Town of Chapel Hill	-- Not Selected
	Town of Garner	-- Not Selected
	Triangle Transit Authority	
	Triangle Transit Authority_Personnel	
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	
	Wolfline_Personnel	
Transit Vehicle Tracking (APTS1) -- Planned		
	Capital Area Transit System	-- Not Selected
	Chapel Hill Transit	-- Not Selected
	City of Durham	-- Not Selected
	City of Raleigh	-- Not Selected
	Duke University Transit	-- Not Selected
	Durham Area Transit Authority	-- Not Selected

Market Packages for Region Triangle

Market Package	Element(s)	
	Durham County	-- Not Selected
	NCDOT Division 4	-- Not Selected
	NCDOT Division 5	-- Not Selected
	NCDOT Division 7	-- Not Selected
	NCDOT Statewide	-- Not Selected
	NCDOT Triangle Region	-- Not Selected
	Orange County	-- Not Selected
	Triangle Transit Authority	
	University of Chapel Hill Transit	-- Not Selected
	Wake County	-- Not Selected
	Wolfline	-- Not Selected

Relevant Standards Activities

Standards for Region Triangle

Organization	Standard Name	Document ID
SAE	Advanced Traveler Information System (ATIS) Data Dictionary	J2353
SAE	Advanced Traveler Information System (ATIS) Message Set	J2354
ANSI	Commercial Vehicle Safety and Credentials Information Exchange	TS285
ANSI	Commercial Vehicle Safety Reports	TS284
EIA/CEA	Data Radio Channel (DARC) System	EIA-794
SAE	ISP-Vehicle Location Referencing Message Profiles	J1746
ITE	Message Set for External TMC Communication (MS/ETMCC)	TM 2.01
IEEE	Message Sets for DSRC ETTM & CVO	1455
AASHTO	NTCIP - Application Profile for File Transfer Protocol (FTP)	2303
AASHTO	NTCIP - Application Profile for Simple Transportation Management Framework (STMF)	2301
AASHTO	NTCIP - Application Profile for Trivial File Transfer Protocol	2302
AASHTO	NTCIP - Applications Profile for Common Object Request Broker Architecture (CORBA)	2305

Standards for Region Triangle

Organization	Standard Name	Document ID
AASHTO	NTCIP - Applications Profile for Data Exchange ASN.1 (DATEX)	2304
AASHTO	NTCIP - Base Standard: Octet Encoding Rules (OER)	1102
AASHTO	NTCIP - Class B Profile	2001
AASHTO	NTCIP - Data Collection & Monitoring Devices	1206
AASHTO	NTCIP - Data Dictionary for Closed Circuit Television (CCTV)	1205
AASHTO	NTCIP - Global Object Definitions	1201
AASHTO	NTCIP - Internet (TCP/IP and UDP/IP) Transport Profile	2202
AASHTO	NTCIP - Object Definitions for Actuated Traffic Signal Controller Units	1202
AASHTO	NTCIP - Object Definitions for Dynamic Message Signs	1203
AASHTO	NTCIP - Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	1204
AASHTO	NTCIP - Object Definitions for Video Switches	1208
AASHTO	NTCIP - Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	2101
AASHTO	NTCIP - Ramp Meter Controller Objects	1207

Standards for Region Triangle

Organization	Standard Name	Document ID
AASHTO	NTCIP - Simple Transportation Management Framework (STMF)	1101
AASHTO	NTCIP - Simple Transportation Management Protocol (STMP)	1103
AASHTO	NTCIP - Subnetwork Profile for Ethernet	2104
AASHTO	NTCIP - Subnetwork Profile for Point-to-Point Protocol using RS 232	2103
AASHTO	NTCIP - Transportation System Sensor Objects	1209
SAE	Standard for ATIS Message Sets Delivered Over Bandwidth Restricted Media	J2369
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	P1512
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	TM 1.03
ASTM	Standard Specification for DSRC - Data Link Layer	Draft Z7633Z
ASTM	Standard Specification for DSRC - Physical Layer 902-928 MHz	PS 111-98
EIA/CEA	Subcarrier Traffic Information Channel (STIC) System	EIA-795
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	1401
ITE	TCIP - Control Center (CC) Business Area Standard	1407

Standards for Region Triangle

Organization	Standard Name	Document ID
ITE	TCIP - Fare Collection (FC) Business Area Standard	1408
ITE	TCIP - Incident Management (IM) Business Area Standard	1402
ITE	TCIP - Onboard (OB) Business Area Standard	1406
ITE	TCIP - Passenger Information (PI) Business Area Standard	1403
ITE	TCIP - Scheduling/Runcutting (SCH) Business Area Standard	1404
ITE	TCIP - Spatial Representation (SP) Business Area Standard	1405
ITE	TCIP - Traffic Management (TM) Business Area Standard	TS 3.TM

Stakeholders Report

Stakeholder	Description

Triangle Region

Associated Element: Department of Motor Vehicles
Associated Element: NCDOT Triangle Region_Roadside Equipment
Associated Element: NCDOT Triangle Region_Personnel
Associated Element: NCDOT Triangle Region_Kiosks
Associated Element: State Highway Patrol_Personnel
Associated Element: Department of Motor Vehicles_Personnel
Associated Element: Emergency Vehicles
Associated Element: NCDOT Triangle Region
Associated Element: State Highway Patrol

State

Associated Element: NCDOT Statewide
Associated Element: NCDOT Statewide_Kiosks
Associated Element: NCDOT Statewide_Personnel

City of Raleigh

Associated Element: Emergency Vehicles
Associated Element: City of Raleigh PD
Associated Element: Capital Area Transit System
Associated Element: Capital Area Transit_Personnel
Associated Element: City of Raleigh
Associated Element: City of Raleigh PD_Personnel
Associated Element: Capital Area Transit_Kiosks
Associated Element: City of Raleigh_Roadside Equipment
Associated Element: City of Raleigh_Personnel

Wake County

Associated Element: Emergency Vehicles
Associated Element: Wake County Sheriff
Associated Element: Wake County EMS
Associated Element: Wake County
Associated Element: Wake County EMS_Personnel
Associated Element: Wake County Sheriff_Personnel

City of Chapel Hill

Associated Element: Emergency Vehicles
Associated Element: Chapel Hill Transit
Associated Element: Chapel Hill Transit_Kiosks
Associated Element: Chapel Hill Transit_Personnel

Stakeholder	Description
Orange County	
	Associated Element: Orange County Sheriff
	Associated Element: Orange County Sheriff_Personnel
	Associated Element: NCDOT Division 7
	Associated Element: Orange County
	Associated Element: Orange County EMS
	Associated Element: Emergency Vehicles
City of Durham	
	Associated Element: Durham Area Transit Authority
	Associated Element: Durham Area Transit_Personnel
	Associated Element: City of Durham PD_Personnel
	Associated Element: City of Durham PD
	Associated Element: Durham Area Transit_Kiosks
	Associated Element: Emergency Vehicles
Durham County	
	Associated Element: Durham County
	Associated Element: Emergency Vehicles
	Associated Element: Durham County Sheriff
	Associated Element: Durham County EMS_Personnel
	Associated Element: Durham County Sheriff_Personnel
	Associated Element: Durham County EMS
City of Cary	
	Associated Element: Emergency Vehicles
City of Apex	
	Associated Element: City of Apex
	Associated Element: City of Apex PD
	Associated Element: City of Apex_Personnel
	Associated Element: City of Apex_Roadside Equipment
	Associated Element: City of Apex PD_Personnel
	Associated Element: Emergency Vehicles
NCDOT	
City of Knightdale	
City of Garner	

Stakeholder	Description
Town of Chapel Hill	
	Associated Element: Town of Chapel Hill PD_Personnel
	Associated Element: Town of Chapel Hill
	Associated Element: Town of Chapel Hill PD
	Associated Element: Town of Chapel Hill_Personnel
	Associated Element: Town of Chapel Hill_Roadside Equipment
Town of Cary	
	Associated Element: Town of Cary
	Associated Element: Town of Cary PD
	Associated Element: Town of Cary_Roadside Equipment
	Associated Element: Town of Cary_Personnel
	Associated Element: Town of Cary PD_Personnel
NCSTATE	
	Associated Element: Wolfline_Personnel
	Associated Element: Wolfline
UNC	
	Associated Element: University of Chapel Hill Transit
Duke University	
	Associated Element: Duke University Transit
Triangle Region	
	Wake County, Durham County, Orange County
Triangle Region - Wake, Durham, Orange County	
	Associated Element: Triangle Transit Authority_Personnel
	Associated Element: Triangle Transit Authority
	Associated Element: Triangle Transit Authority_Kiosks
Johnston	
	Associated Element: NCDOT Division 4
Wake and Durham Counties	
	Associated Element: NCDOT Division 5

Stakeholder	Description
Department of Motor Vehicles	
	Associated Element: CVO Inspector
Town of Garner	
	Associated Element: Town of Garner

Regional Architecture: Triangle

FlowName: transit fare payment responses **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Capital Area Transit_Kiosks

In Regional Architecture?: True

FlowName: transit traveler information **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Capital Area Transit_Kiosks

In Regional Architecture?: True

FlowName: toll revenues and summary reports **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Capital Area Transit_Personnel

In Regional Architecture?: True

FlowName: transit operations planning data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Capital Area Transit_Personnel

In Regional Architecture?: True

FlowName: transit operator display **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Capital Area Transit_Personnel

In Regional Architecture?: True

FlowName: TRMS coord **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Chapel Hill Transit

In Regional Architecture?: True

FlowName: local signal priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Apex_Roadside Equipment

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: toll demand management response **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: traffic control priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

Regional Architecture: Triangle

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: transit demand management response **Flow Status:** Planned

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: transit incident information **Flow Status:** Planned

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: transit system data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh

In Regional Architecture?: True

FlowName: transit emergency data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh PD

In Regional Architecture?: True

FlowName: violation notification **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh PD

In Regional Architecture?: True

FlowName: local signal priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: City of Raleigh_Roadside Equipment

In Regional Architecture?: True

FlowName: transit emergency data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Department of Motor Vehicles

In Regional Architecture?: True

FlowName: TRMS coord **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Durham Area Transit Authority

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: toll demand management response **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: traffic control priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: transit demand management response **Flow Status:** Planned

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: transit information for media **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: transit system data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 4

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: toll demand management response **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: traffic control priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: transit demand management response **Flow Status:** Planned

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: transit information for media **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: transit system data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 5

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: toll demand management response **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: traffic control priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: transit demand management response **Flow Status:** Planned

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: transit information for media **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: transit system data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Division 7

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Statewide

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Statewide

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Statewide

In Regional Architecture?: True

FlowName: transit incident information **Flow Status:** Planned

Source: Capital Area Transit System

Destination: NCDOT Statewide

In Regional Architecture?: True

FlowName: transit information for media **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Statewide

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Statewide

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: toll demand management response **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: traffic control priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: transit demand management response **Flow Status:** Planned

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: transit incident information **Flow Status:** Planned

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: transit system data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region

In Regional Architecture?: True

FlowName: local signal priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: NCDOT Triangle Region_Roadside Equipment

In Regional Architecture?: True

FlowName: transit emergency data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: State Highway Patrol

In Regional Architecture?: True

FlowName: violation notification **Flow Status:** Existing

Source: Capital Area Transit System

Destination: State Highway Patrol

In Regional Architecture?: True

FlowName: local signal priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Town of Cary_Roadside Equipment

In Regional Architecture?: True

FlowName: local signal priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Town of Chapel Hill_Roadside Equipment

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority

In Regional Architecture?: True

FlowName: transit incident information **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Triangle Transit Authority

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority

In Regional Architecture?: True

FlowName: TRMS coord **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority

In Regional Architecture?: True

FlowName: toll revenues and summary reports **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority_Personnel

In Regional Architecture?: True

FlowName: transit operations planning data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Triangle Transit Authority_Personnel

In Regional Architecture?: True

FlowName: transit operator display **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Triangle Transit Authority_Personnel

In Regional Architecture?: True

FlowName: personal transit information **Flow Status:** Existing

Source: Capital Area Transit System

Destination: User Personal Computing Devices

In Regional Architecture?: True

FlowName: demand responsive transit plan **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: probe data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: toll data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: toll demand management response **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: traffic control priority request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: transit and fare schedules **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: transit demand management response **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: transit incident information **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: transit request confirmation **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: transit system data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: TRMS coord **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County

In Regional Architecture?: True

FlowName: transit emergency data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County EMS

In Regional Architecture?: True

FlowName: violation notification **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County EMS

In Regional Architecture?: True

FlowName: transit emergency data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County Sheriff

In Regional Architecture?: True

FlowName: violation notification **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wake County Sheriff

In Regional Architecture?: True

FlowName: bad tag list **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: driver instructions **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: emergency acknowledge **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: emergency notification **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: fare and payment status **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: fare management information **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: request for bad tag list **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: request for vehicle measures **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit schedule information **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit traveler information **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit traveler request **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit vehicle conditions **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit vehicle location data **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit vehicle passenger and use data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit vehicle schedule performance **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: TRMS coord **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline

In Regional Architecture?: True

FlowName: transit operations planning data **Flow Status:** Existing

Source: Capital Area Transit System

Destination: Wolfline_Personnel

In Regional Architecture?: True

FlowName: transit operator display **Flow Status:** Planned

Source: Capital Area Transit System

Destination: Wolfline_Personnel

In Regional Architecture?: True

FlowName: transit fare payment requests **Flow Status:** Existing

Source: Capital Area Transit_Kiosks

Destination: Capital Area Transit System

In Regional Architecture?: True

FlowName: transit information user request **Flow Status:** Existing

Source: Capital Area Transit_Kiosks

Destination: Capital Area Transit System

In Regional Architecture?: True

FlowName: traveler interface updates
Flow Status: Planned
Source: Capital Area Transit_Kiosks
Destination: NCDOT Statewide
In Regional Architecture?: True

FlowName: traveler request
Flow Status: Planned
Source: Capital Area Transit_Kiosks
Destination: NCDOT Statewide
In Regional Architecture?: True

FlowName: trip confirmation
Flow Status: Planned
Source: Capital Area Transit_Kiosks
Destination: NCDOT Statewide
In Regional Architecture?: True

FlowName: trip request
Flow Status: Planned
Source: Capital Area Transit_Kiosks
Destination: NCDOT Statewide
In Regional Architecture?: True

FlowName: transit fare payment requests
Flow Status: Existing
Source: Capital Area Transit_Kiosks
Destination: Wake County
In Regional Architecture?: True

FlowName: transit information user request
Flow Status: Existing
Source: Capital Area Transit_Kiosks
Destination: Wake County
In Regional Architecture?: True